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Red Heart of the Home

IT is at this time of the year that the coalman comes into his own, for millions of people will surely think kindly of him while they bask in the beneficent warmth of one of the best loved symbols of the Christmas season, the open fire in the hearth—the "red heart" of the home. It would be nice if every householder in the country could, today or tomorrow, receive a bag of coal in a Christmas wrapping to which was attached the message: "With the compliments of the men who delved deep into the earth to provide this fuel for your delight, and of the railway workers and deliverymen who brought it to your door. Think well of them."

It would be nice, and it would be one of the best pieces of public relations work that the National Coal Board could contrive, but, alas, it is impracticable. We must let the coal fire speak for itself, and if we are in the right mood it will do just that, for a fire is a living thing—the companion of the lonely, the comforter of the old, a joy to the young, and a solace to the sick at heart. Let us enjoy it to the full this Christmas, forgetting for the nonce the trials and troubles of business life, fighting them back if they do intrude with the thought that in whatever way we get our living, from coal, from iron or steel, from heavy or light engineering, even from oil, we see on the blazing hearth a symbol of British greatness, for coal is the basis of all our industry, and the prime supporter of our national economy. Enjoy the coal fire therefore this Christmas, and, in doing so, pay to coal its just tribute, for its work in turning the wheels of industry, and providing warmth and comfort in the home.

Much has been said and written about the open hearth, the glowing, cheerful coal fire, warming not only cold hands and feet, but heavy hearts and dulled spirits, too. What is there to say about it that is new? What that has already been said a thousand times, in a million different ways, bears repeating? Strangely enough, a good deal of it does, dating from the pre-Christian era: in poetry and in prose, in novel and in public speech, in sermon and address. It is not our intention to weave our way through a book of quotations to find familiar or unusual examples: but we can recommend that procedure as a Christmas pastime to members of the coal industry and trade, relaxing by the fireside, and perhaps a little tired of television. Our purpose here is to convey our good wishes to all readers for a joyous Christmas and a Happy and Prosperous New Year. If, at the same time, we remind them of the place which the open fire holds in the home here and now, we hope they will bear with us.

There is plenty of evidence—and the coal merchant himself, looking back on late summer and autumn demand, will agree—that the open fire still holds a place of honour in the homes of the British people. It has of late gone through many vicissitudes and has come under the lash of severe criticism. It has its faithful champions, and a growing number make their voices heard in its defence; but the main body of them, who really keep it burning in the grate, are the people of the British Isles, who recognize quality when they see it and stick to it. The bulldog breed!

But let us not deceive ourselves. Victoriana may have spread its effusive decoration once again over the bric-à-brac among which we search for presents, but it has not returned to the hearth. No longer is there plenty of cheap coal to heap on the roaring fires and waste up the chimney. No longer do the voluminous swirling dresses—and stiff upper lips—keep out the draughts. No longer do servants rise at 6 a.m. to clear the ash from the dead grates, black-lead the range, and re-light the fires. Those days are as dead and gone as the fires that warmed them. The open fire has outlasted them, but, like the Christmas message itself, it needs a different presentation in this changed world. The open fire must be attractive, highly efficient, economical, and labour-saving, and it must be supplied with fuel of consistent quality, the right fuel, regularly delivered, and at the right price. Thousands of homes already have modern fires, round which the family is gathered this Christmas, and thousands of homes get a wonderful service from their coal merchants. But far too many have not caught up with the times—both consumers and merchants.

We do not intend to end on a note of gloom. The year behind has seen a wonderful tightening of purpose in the coal industry and trade. There is a feeling of buoyancy in the air and a sure knowledge that coal is beginning, once more, to regain its rightful place. Through years of control the welcome it received in the home was beginning to show signs of wear and tear. Now the new "King Coal" is on the march. And he is bound for success.

Passing Thoughts . . .

IN connection with the trade unions, though there may be some labour discordance at times, it is relatively small in comparison with the vast army of wage earners. And in this country, with its democratic freedom and voluntary labour codes, the responsible, conscientious and well-informed leadership of the trade unions—nationally and locally—is a source of pride to us and an example to the world.—MR. H. F. SPENCER, managing director of Richard Thomas & Baldwins, Limited.

By co-operating in raising production and trying to secure better conditions for their members, such as compensation for redundancy, pensions, and contracts of service, instead of concentrating on pay rises at all costs, union leaders might restore vitality to the movement.—The Scotsman.

The British Employers Confederation and the Trades Union Congress yesterday held their exploratory meeting on industrial relations and decided to meet again in the spring when the two sides may know better what they want to talk about.—The Guardian.

Redundancy is one of the basic reasons for restrictive practice and is the everlasting bogyman in our industrial cupboards.—MR. W. J. CARRON, *president of the AEU, in a lecture to the Royal Society of Arts.*

Mr. Robens takes a professionally rosy view of the future of the coal industry, but he may well be right in suggesting that it should be out of the red in two years' time. . . . The industry's best hope in the immediate future is to adopt more flexible pricing policies, charging more for the large coal which is becoming increasingly scarcer and more expensive to produce; strengthening its hold on the electricity and steel industries, and competing with oil for the custom of manufacturing industry according to local circumstances.—Financial Times.

The popular idea that the Yorkshire miner spends his money on beer and dogs is outdated—in fact he is one of the thriftiest (if not the thriftiest) men in industry—MR. JOHN DEANS, *Yorkshire Regional Commissioner for National Savings.*

Does he [the President of the Board of Trade] not realize that the remaining industry in the North-west Durham constituency—the manufacture of cosmetics and the making of ladies' gloves, underwear, and dresses—is not suitable employment for ex-miners or quarrymen?—MR. WILLIAM AINSLEY, MP, in the House of Commons.

I would urge every manufacturing and exporting company in these islands to hang Millais' famous painting "The Boyhood of Raleigh" in its board room. That outstretched arm of Millais' sailor still points towards opportunity in the Western Hemisphere.—LORD ROOTES, *chairman of the newly-formed Western Hemisphere Exports Council.*

BRITISH EXPORTERS are being made a "laughing-stock" by bad deliveries, and this is one of the central problems manufacturers have to face, Mr. Peter Tennant, overseas director of the Federation of British Industries, said at an "export round-table" in Cambridge, organized by the Eastern region of the FBI on Tuesday. "We do not seem able to deliver the goods as well as our competitors do," he said.

Minister of Power Visits Pilot Plant for Smokeless Fuel

NEW smokeless fuel being developed by the National Coal Board should be on sale to the public by 1965. This was stated by Mr. Richard Wood, Minister of Power, after he had visited Birch Coppice Colliery, near Tamworth (Warwickshire), where a £1,000,000 pilot plant is being built.

The pilot plant will be taken over by the board in the New Year and will produce 40,000 to 50,000 tons of briquettes a year, which will be tried on the market so that reaction to the new fuel can be studied.

Mr. Wood said it was hoped to start building a commercial plant, at a cost of between £4,000,000 and £5,000,000, towards the end of next year. It was likely to be near Coventry. It was also hoped that by 1965 1,000,000 tons of smokeless fuel would be produced a year, more than half of it at Coventry and the remainder in South Wales.

Mr. Wood, who was accompanied by Dr. J. Bronowski, director of the NCB Central Research Establishment, which will control the pilot plant, added that the cost of the fuel to the consumer would be comparable to that of other smokeless fuels. The new fuel would leave very little residue and would give more heat than coal.

The plant at Coventry would be fed by several collieries in Warwickshire and a labour force of 200 men will be drawn from the West Midlands Division of the Coal Board.

Christmas Greetings —from "Old George"

ANYONE asked to commemorate, in verse, the golden jubilee of the Association of Mining Electrical and Mechanical Engineers, making sure that the full title of the association was included as often as possible, might feel a little daunted. Apparently the task had no terrors for Mr. G. M. Harvey, a past-president of AMEME and a former HM Chief Electrical Inspector of Mines.

In "Scraps from the Dustbin." (by Old George)—sent to IRON AND COAL with the author's Christmas greetings—Mr. Harvey manages to accomplish just such a feat and in no fewer than five stanzas!

In what is probably a novel Christmas card for all his friends, Mr. Harvey has had reproduced 12 of his doggerel verses, from a modern version of "Summer is Icumen In" which reflects that the amateur's gardening shed nowadays looks more like a chemist's shop, to "T' Ballad O' T' Brid-l'-T'Hond," a competent essay in dialect.

This is one Christmas card which will not be consigned to paper salvage or even as a "Scrap" back to "the Dustbin."

MINER WHO ADMITTED being asleep underground while in charge of the haulage gear at Frances Colliery, Dysart (Fifeshire), was fined £15 at Kirkcaldy Sheriff Court. He was David Lynch, who was stated to have been dismissed from his job after the incident.

Steel Needs in 1961

HIGH DEMAND FORECAST, DESPITE CAR RECESSION

DEMAND for steel for investment, the largest sector, is expected to continue at a high level into 1961, although demand by the motor and other consumer goods industries may be less buoyant, at least in the earlier part of the year, states the Iron and Steel Board. Current rate of steel output is equivalent to 25,200,000 ingot tons, a year, allowing for normal holidays, while production during 1960 is likely to be about 24,300,000 tons—equal to the estimate given in the board's June production statement.

Capacity is continuing to expand, says the board. This year it is estimated at 25,500,000 ingot tons, and next year it is likely to be 27,000,000 tons. This is in line with the growth towards 29,000,000 tons in 1962, envisaged in the board's Report on Development in the Iron and Steel Industry.

The demand for stock-building, which absorbed some 1,400,000 ingot tons of steel in the first nine months of 1960, is unlikely to be repeated in 1961. Imports, which amounted to 1,300,000 tons in the first nine months of 1960, are expected to fall very substantially. Efforts are being made to increase exports above the high level reached during the past year.

Raw Materials Supply

Arrangements are in hand, states the board, for the supply of raw materials needed to meet a steel production in 1961 which is expected to lie within the range of 24,000,000 to 25,000,000 tons on the basis of present trends. If demand is stronger, further output above this range could be secured without creating the need for any significant imports of scrap and pig-iron.

Results of the census taken at the end of September, now almost in their final form, indicate that users' stocks of finished steel in total rose by a little over 200,000 tons or 5 per cent. in the third quarter, confirming the preliminary estimate given last month. The increase in stocks of sheet amounted to 150,000 tons or 26 per cent. in the quarter, rather greater than the earlier estimate.

It would appear that the main increases in stock so far this year have occurred at the works of the large firms in private industry. Stocks held by public organizations have remained almost constant. Apart from sheet, stocks of steel held by users rose by 65,000 tons or 2 per cent. in the third quarter, compared with rises of 5 per cent., and 6 per cent. in the first and second quarters respectively.

Deliveries of finished steel to groups of using industries for the second quarter and October, 1960, indicate that there has been a marked change in the pattern of supplies during the year. Weekly average deliveries have increased to the industries producing investment goods, such as industrial plant and steelwork, mechanical and electrical engineering, and to the iron and steel industry itself. On the other hand deliveries for the production of durable consumer goods, including cars and domestic electric apparatus, have been falling. Deliveries to the coal mines, to the shipbuilding industry, and to the railways are showing little change and are remaining near the low levels of the past three years.

Rapid Progress at Durgapur

AT the present rate of progress it seems that the Indian Steelworks Construction Company, Limited, will complete Stage 3 of the new £105,000,000 Durgapur Steelworks, near Calcutta, ahead of its target date, April, 1961. At the end of Stage 3 more than three quarters of the work on the project will be finished.

Since No. 1 blast furnace went into production, at the end of last year, activity has intensified at Durgapur. Halfway through 1960 steel making and shaping was under way with the commissioning of three open-hearth furnaces, three rolling mills and the sleeper plant. Operation and construction are now in progress side by side.

Construction is now well advanced on the third and final units of the coke-oven and blast-furnace plant. The structural work for the remaining four open-hearth furnaces in the steel melting shop is complete and two are now lined with refractory bricks. Final two units of the rolling mill plant have progressed so far that some of the electric drives of the section mill have been tried out.

Stage 4, the final, at Durgapur includes the wheel and axle plant, details of which were not completed until after the start of the original contract. Construction has now been phased so that wheel sets for Indian Railways will be produced early next autumn. The wheel and axle plant, when complete, will have an annual production capacity of 45,000 wheel sets.

ECSC Now World's Leading Steel Producer

STEEL output in the six countries of the European Coal and Steel Community in November was 6,140,000 tons, bringing the 11-month total to 66,930,000 tons—a rise of more than 16 per cent. over last year.

Production rate of the ECSC has since August been ahead of that of the US, so that the Community ranks for the first time as the world's leading producer by a margin over the four months of 3.8 per cent.

LITTLE MORE than 7 per cent. of the labour force of the Pressed Steel Company, Limited, has been made redundant by the recession in the motor and domestic appliance industries, according to the company's house magazine, Press Express.

Personal

Institute of Metals Honours Prof. Hume-Rothery

FIRST Isaac Wolfson Professor of Metallurgy at Oxford University since 1958, Prof. William Hume-Rothery, FRS, has been elected an honorary member of the Institute of Metals. He has had a distinguished academic career, having held several research Fellowships in metallurgy. In 1949 the Institute of Metals awarded him its platinum medal and in the same year he won the Francis J. Clamer Medal of the Franklin Institute. The Royal Netherlands Academy awarded him the Roozeboom Gold Medal in the following year and he took the Luigi Losana prize medal from Italy in 1955. He has published several important books and papers on metallurgy and the American Society for Metals made him an honorary life member in 1957.

The council of the Institute has also elected Maj. Charles J. P. Ball, director of British Hydrocarbon Chemicals, Limited, Sterling Metals, Limited, and other companies, Dr. Maurice Cook, and Lt.-Col. S. C. Guillan as Fellows in recognition of the services that they have rendered. The number of honorary members and Fellows of the institute is restricted to 12 in each case.

Mr. W. T. JONES, who has been secretary of the Coal Trade Benevolent Association for 36 years, retires on December 31. He will be succeeded by Mr. H. C. F. SQUIRE.

Sir ALEXANDER FLECK, FRS, former chairman of Imperial Chemical Industries, Limited, and Sir PATRICK LINSTEAD, FRS, Rector of the Imperial College of Science and Technology, have been appointed two of the vice-presidents of the Royal Society for the year ending November 30, 1961.

Secretary of Coventry Chamber of Commerce since 1939, Mr. VINCENT L. BRAILSFORD is to resign to take up the newly-created post of commercial manager of Alfred Herbert, Limited, machine tool manufacturers, of Coventry. On taking up the appointment on March 1, 1961. he will join the board.

Mr. GEORGE LE B. DIAMOND, chairman of the West Midlands Gas Board since nationalization in 1949, is to retire on July 31, 1961. Mr. Diamond has spent his entire career in the gas industry and in 1939 he was seconded to the Ministry of Mines and then the Ministry of Fuel and Power. He is to be succeeded by Mr. C. H. Leach, chairman of the Southern Gas Board.

After 40 years' service, Mr. T. E. H. BIRLEY, deputy oversea manager of British Insulated Callender's Cables, Limited, has retired. He joined the Macintosh Cable Company, Limited, in 1920, transferring to British Insulated Cables, Limited, in 1936, when Macintosh became absorbed by the BI Company. In 1950 he became regional manager for central and South America and was appointed to his present position in 1957.

Well-known member of the sales organization of the Goodyear Tyre & Rubber Company (Great Britain), Limited, Mr. SYDNEY OXON is to retire at the end of the month after more than 44 years' service with the company. He joined Goodyear in 1916 and became sales manager four years later. He was sales manager of the Northern division until 1931 when he took control of the southern division.

£10,000,000 Assets Sold By ISHRA in 1959-60

PROGRESS in denationalization of the steel industry during 1959-60 included the sale of four more companies and the liquidation of another, reducing the number of companies still directly owned by the Iron and Steel Holding and Realisation Agency to seven, states the agency's annual report for the year to September 30, 1960, published on Thursday of last week. Total value of enterprises returned to private ownership in the year was £10,000,000 and the gross realization of all assets sold by the agency up to September 30 this year totals almost £250,000,000.

Most important subsidiary of the agency, which accounts for three quarters of the value of the wholly-owned assets remaining under its charge, is Richard Thomas & Baldwins, Limited. The integrated steelworks now being built at Newport (Mon) for RTB will cost about £119,000,000 according to the agency's report, of which the Minister of Power has now agreed to lend £70,000,000.

An interest is still retained by the agency in 11 companies, including Colvilles, Limited, Consett Iron Company, Limited, Dorman, Long & Company, Limited, Guest, Keen & Nettlefolds, Limited, John Summers & Sons, Limited, Stewarts and Lloyds, Limited, Steel Company of Wales, Limited, and the United Steel Companies, Limited, but since September 30 the agency has sold its holding of £1,050,000 of 4½ per cent. redeemable debenture stock, 1970-85 in the Whitehead Iron & Steel Company, Limited.

In terms of employment, steel production and sales of products, the companies which have ceased to be subsidiaries accounted for more than six sevenths of the agency's original inheritance. The agency's holding has been completely transferred to private hands in 44 companies, representing £98,000,000.

Henry Tizard Memorial

WESTMINSTER SCHOOL has established a Henry Tizard Memorial Fund, the income of which will be used to equip the school's new science laboratories, to extend the facilities for teaching and research there, and to establish an annual Tizard Memorial Lecture.

An Old Westminster and for many years a governor of the school, Sir Henry Tizard's great achievement was in the formation and direction of scientific policy; by his insistence on the application of science to industry and by the powerful support he gave to work on radar and on the jet engine he played a leading part in the advancement of the nation in peace and its survival in war. It is felt that his work can best be recognized by helping the young engineers and scientists in whose progress he was so deeply interested, and it is hoped that all those who have known and valued Tizard's work will support the fund. Contributions should be sent to the Henry Tizard Memorial Fund, 17, Dean's Yard, London, S.W.1.

TWO HUNDRED MEN have been paid off at the Hebburn-on-Tyne shipyard of Hawthorn, Leslie & Company, Limited. The unions had suggested that the men could be retained if some system of work sharing was adopted, but the company said it would not be possible to do this with all trades.

Law Cases

Auchengeich Colliery

"VANDALISM" OF SAFETY EQUIPMENT RE-EMPHASIZED

RESPONSIBILITY for ensuring that materials bought under national contracts and supplied to collieries were up to specification remained with the National Coal Board, said Mr. B. L. Metcalf, NCB director of engineering, but the board could not be responsible if at any pit equipment or material was put to a use for which it was not designed. Mr. Metcalf was giving evidence at the trial, at Glasgow Sheriff Court, of the former manager and former undermanager at Auchengeich Colliery (Lanarkshire).

The trial was the outcome of the fire at the pit on September 18, 1959, when 47 miners died. James Ford Smellie, the manager, and Alexander Pettigrew, the undermanager, pleaded Not Guilty to a total of 10 charges alleging contravention of the Mines and Quarries Act. Mr. A. Thomson, QC, assisted by Mr. R. I. Sutherland, appeared for the defendants, and Mr. Leslie McLeod, deputy procurator-fiscal, prosecuted.

Questioned about the supply to the colliery of balata belting which was used on the booster ventilating fan where the fire started, Mr. Metcalf said the NCB, through its purchasing and stores department, placed a contract with a Birkenhead firm for the supply of belting to British Standards specification. Samples were taken of about 8 per cent. of the belting.

Tests on Balata Belting

There was a chance that some belting not up to standard might get through to a colliery. He did not see what the manager could do to ensure that belting arriving at a pit was of suitable strength. He could see no justification for a suggestion that the manager should have made an examination of the belt or tested it in some way. In practice the manager had no facilities for testing it.

Evidence of testing belting similar to that which caught fire was given by Mr. F. J. Hartwell, a senior principal scientific officer, Safety in Mines Research Establishment, Buxton. He said that the object of the tests made was to demonstrate how a belt could be brought to the point of combustion. A belt slipping never got hot enough to reach flame-combustion state as long as it was moving. Rubbing against an asbestos cement sheet of a brick wall it was possible to get the edge of the belt smouldering and in one test it smouldered, broke, and burst into flames. In the third test a fully-stalled belt on a moving pulley smouldered, broke, fell on the floor, and burst into flames when a current of air was applied.

Earlier, evidence that the fan had been speeded up a few months before the fire, was given by Mr. James Lawrie, deputy Area production manager (operations), Central West Area of the Scottish Divisional Coal Board. Expressing his opinion from his experience as a colliery manager and not as a mechanical engineer, Mr. Lawrie said that if a small number of the 128 half blades on the fan were missing it would not make any appreciable alteration to its efficiency.

Re-examined on Wednesday of last week, the pit's safety officer, Mr. Robert Harvie again emphasized the damage done to fire-fighting equipment at Auchengeich and said it was "even worse" after the disaster. He denied that he was exaggerating the damage. Fire extinguishers put in one day were "let off" the next. The police had not been called in about the damage, but an effort had been made to find out who was responsible. "Nobody will tell you," he said. "It is a mistaken sense of loyalty among the miners."

Mr. James H. Dickson, assistant overman, also described how, when he found the belt on fire he got a fire extinguisher which was about 30 yds. away. It would not work. He got another; it also would not work.

In the course of his evidence, Mr. David McAuley (58), a mechanical engineer at Auchengeich, said that on September 16 he fitted a new belt on the fan and watched it for about an hour. The belt started to slip and he took it off and cut off about 6 in. The fan then worked satisfactorily. On the following day the belt was slipping again, through stretch, and he cut off another 4 in.

Evidence at last Friday's hearing was mainly concerned with the state and mechanical inspection of the ventilating fan. A mechanical engineer at the colliery, Mr. Matthew Barr, said that he did not know of anyone who had responsibility for stopping the fan and examining the blades. In the four years in which he had carried out these duties he had never made a detailed mechanical inspection with the fan stopped. He knew of no one in the pit, mechanical or otherwise, who had the responsibility for the fan.

Further evidence concerned the beginning of the outbreak of fire at the pit.

Mr. David McKinnon, chief electrical and mechanical engineer at the colliery, said on Monday that three months before the fire he had been instructed to inspect the fan. He did not stop the fan, but gave it a visual inspection with the machinery still running. It was a simple piece of apparatus, and observations taken while running were quite sufficient to observe anything wrong. He agreed that he had been consulted about a decision to speed up the fan in June, 1959.

Mr. William Gordon Williams, mechanical engineering inspector of mines for Scotland, said he thought

that increasing the speed of the booster fan would warrant a fairly thorough examination. He thought that the fan should be stopped at six-monthly intervals for examination.

The hearing of evidence continues.

NEGLIGENCE COST AN EYE

FITTER who lost an eye in an accident at Abernant Colliery (Glam), was awarded £2,000 damages at Glamorgan Assizes. Mr. Egeslaw Majewski (34) was employed by the Cementation Company, Limited, on work being done at the colliery for the National Coal Board. He claimed that while lifting ventilation pipes the steel hawser broke and he lost an eye. The company and the board were defendants to the action.

Mr. Justice Stevenson said that the two defendants were guilty of negligence, and had broken the regulations. They claimed that no rope had been broken and that the plaintiff was hit in the eye while throwing the rope around the tubes. Faced with the question of whether or not the rope did, in fact, break, Mr. Justice Stevenson said that he accepted Mr. Majewski's evidence.

ACCIDENT CLAIM DISMISSED

DISMISSING a claim for damages against William Asquith, Limited, machine tool manufacturers, of Halifax, Judge R. W. Payne said, at Halifax County Court, that the plaintiff, Mr. Thomas Marron (55), of Halifax, might have fallen over 101 different things standing on the floor at the factory. The steel bar, over which Marron claimed he fell and fractured his elbow, in its present position was not a danger.

"One must have regard to the fact that this was part of the floor which was used for assembling and sorting parts," the judge said. The fact that a man had to pick his way about the shop floor did not mean that the obstructions he had to pass were dangerous.

CIGARETTES IN PIT

AT Linlithgow Sheriff Court, Peter Grimbley Aitken Canning (20), pleaded guilty to having two cigarettes in his possession in Woodend Colliery, Armadale (West Lothian), on October 12. The fiscal said the cigarettes were found on him when he was going underground.

Sheriff A. J. Stevenson said Canning had acted not only as a complete fool and regardless of his own safety, but what was worse, with complete disregard of the safety of many other people who worked with him. A fine of £15 was imposed.

AT LEEDS ASSIZES, Mr. Justice Hinchcliffe approved a settlement of an action by which the National Coal Board submitted to judgment for £7,000 damages and costs in favour of Mr. Arthur Lee (23), who sustained serious spinal injuries when employed at Thornhill Colliery in 1956.

ADMITTING a contravention of safety regulations. the National Coal Board was fined £100 at Lanchester. Mr. H. H. Tranter, factory inspector, said that the board failed to ensure that a guard accompanied the leading wagon of a train at Langley Park coke works. The case arose out of a fatal accident.

PETITION for the compulsory winding-up of A.B.C. Coupler & Engineering Company, Limited, Wolverhampton, presented by F. H. Lloyd & Company, Limited, steel founders and engineers, of Wolverhampton, judgment creditors for £17,542, has been dismissed in the Chancery Division.

NORTHERN NCB MEETS NUM BRANCHES' ALLEGATIONS

CHAIRMAN, Mr. Leslie Graham, and representatives of the Northern (N&C) Divisional Board have met Mr. J. A. MacFarlane, president, and Mr. J. Leatham, secretary, and the full executive committee of the NUM (Northumberland Mechanics Group 1) to discuss the allegations against the board of bad planning, extravagance, and waste made by the Backworth and Rising Sun, Wallsend, branches of the Mechanics' Association, in their letter of November 14, to Mr. Alfred Robens, chairman-designate of the National Coal Board, and in statements made to the Press.

It is the recognized code of conduct that a branch wishing to raise any matter with the Divisional Board must do so through the proper channels. Any other methods are unconstitutional and will not be tolerated by the union or by the board. The meeting deplored the unconstitutional action of the branches in making allegations other than through the recognized channels and both have been severely reprimanded by their executive committee for their unconstitutional action in this case.

The representatives of the Divisional Board made full and frank replies to each allegation made by the branches and answered several questions raised by members of the Mechanics Executive Committee, which now states that it has decided, after full and careful consideration, that the charges made by the Rising Sun and Backworth branches were "totally unwarranted and indeed, in some cases, frivolous and mischievous and damaging to the mining industry."

Obituary

MR. W. G. AULD, until nine years ago secretary of the North British Steel Foundry, Limited, engineers and steel founders, Bathgate, Scotland, has died aged 58. He started with the company as an office boy, eventually leaving to found his own business supplying angle-iron, nuts, bolts, and other accessories.

MR. ROBERT BOWDEN FISHER, purchasing manager of Richard Thomas & Baldwins, Limited, Ebbw Vale, died at his home at Llanover, aged 68. Mr. Fisher, who was shortly to retire from the company, entered mining in West Wales in 1908 and qualified as a mining engineer. He moved to the steel industry in 1920, being appointed works manager at Duffryn Works, Morriston, before it was absorbed by RTB. He then held various posts in London and West Wales until going to Ebbw Vale as purchasing manager in 1942. Mr. Fisher served in the first world war with the Royal Engineers. He was wounded in 1917, and was awarded the Croix de Guerre. His interests included local history and the Boy Scout movement. In the Senghenydd pit disaster in 1912 he led a team of rescue workers.

On Tuesday of last week, Mr. WALLACE RYLANDS WILLIAMS, for the past 40 years chairman and joint managing director of Williams Bros. & Piggott, Limited, brass and copper tube manufacturers, of Birmingham, died at the age of 82. For many years he was chairman of the Brazed Brass Tube Association, and was a prominent member of the Brass and Copper Tube Association. He took part in the formation of the British Non-Ferrous Metals Federation towards the end of the last war.

TATA IRON & STEEL

Measures to Reach 2,000,000 Tons Output

DETERIORATION in the quality of coal and iron ore and delays in the transportation of raw materials over a heavily strained railway system are blamed by Mr. J. R. D. Tata, chairman of Tata Iron & Steel Company, Limited, Bombay, for the company's failure to reach, in the past financial year, a rate of production nearer to the planned capacity of its expanded plant. The company is confident, however, that various measures when completed will enable the works to achieve, and possibly exceed, the full target output of 2,000,000 tons of ingots and 1,500,000 tons of saleable steel.

Mr. Tata, in his statement to shareholders, says that the year to March 31, 1960, had been a full and significant one, which saw the completion of the biggest expansion programme ever undertaken in the history of the company, and the introduction of a new wage structure following three years of intensive studies and negotiations. About half of the company's plant was now wholly modern, and the additional 1,000,000 tons capacity had been put up in gratifyingly quick time and at relatively low cost.

The company had spent on it approximately Rs. 1,060,000,000 (£79,500,000), and even if the total costs came to Rs. 1,100,000,000 (£82,500,000), including the costs of certain modifications and additions, it would still amount to only Rs. 1,100 (£82 10s.) per ton of ingot capacity. The same capacity in an entirely new integrated steel plant would cost at least Rs. 1,800 (£135) per ton, or over 65 per cent. more.

Raw Material Difficulties

In spite of the difficulties regarding quality and supply of raw materials, the company had already stabilized production at a rate equivalent to about 80 per cent. of full capacity—a figure which in most countries would be considered quite good. Added to the difficulties which the company had to overcome to get full production was the need for certain modifications and additions to the ore crushing and screening plant and to steel melting shop No. 3. Some of the remedies required action by the company, others by the Government, but in both cases action had already been initiated, or was being planned.

To counteract the increase in the ash content of coke, which seriously affected operation at the blast furnaces, the maximum use of washed coal was necessary. Increased dispatches of washed coal from the company's own washeries should appreciably reduce the ash content of the coke, but this serious handicap could not be completely surmounted until 1962-63, when the Government's long delayed Bhojudih washery was completed.

In the case of iron ore, the problem was a two-fold one of improving the quality of the ore dispatched from the mines and of ensuring regular supplies of properly blended and sized ores to the plant. To solve this problem, the company had in hand a programme aimed in the short term at improving the performance of ore crushing and screening plant, which was a serious bottleneck, and in the long term at beneficiating the ore raised at the mines, as well as at storing and blending it at Jamshedpur before it was fed to the sinter plant and blast furnaces.

The immediate short term programme was hoped to be completed in a year or so, and would, apart from additions to mining equipment and to the old washing plant at Noamundi, consist mainly in the provision of wet screening at the ore crushing and screening plant at Jamshedpur. The long range plan, which would take about four years, would consist of a detailed geological survey of the company's main mines, large-scale washing tests of ore, and the possible construction of ore beneficiation plants at Noamundi and Joda. It would also provide at Jamshedpur complete facilities for unloading, stacking, and blending ores and other raw materials received from the mines.

The cost of the immediate programme would be something under Rs. 10,000,000 (£750,000), while expenditure on the long range plan would depend on the survey and tests mentioned. Whatever the ultimate figure, there was no doubt it would yield a worthwhile return by way of higher production and lower costs.

In order to increase the output of steel melting shop No. 3, it had been decided, in line with the latest and growing practice in other countries, to use oxygen on a large scale in the open-hearth furnaces to reduce the time taken from one furnace charge to the next. This would require changing the present silica brick roofs of the furnaces to basic roofs and the installation of a large tonnage oxygen plant. These modifications and additions were expected to be completed within two years.

Mr. Tata concludes: "We have the physical and human resources to get the best out of our renovated and expanded plant and, barring the unpredictable effect of Government policies, particularly in the matter of retention prices, I look upon the future of the company with confidence."

Canadian Standards Approval for New Grade Steel

NEW grade of structural steel, developed through the combined efforts of the Canadian basic steel industry fabricators, and allied groups, which in some structures, it is claimed, could reduce the weight of steel used by 12 per cent., has been approved by the Canadian Standards Association.

Algoma Steel Corporation, Limited, Ontario, states that the steel is known as CSA-G-40.8.

Board Changes

Effingham Steel Works Chairman Resigns

FOLLOWING his resignation as chairman of the EFFINGHAM STEEL WORKS, LIMITED, Sheffield, Lt.-Col. W. Lockwood Marsh has been appointed president of the company. Mr. B. H. Barber and Mr. P. W. Marsh have resigned as managing directors and become, respectively, chairman and deputy chairman. Mr. J. H. Allan has been appointed managing director.

Mr. Lawrence Brittain and Mr. P. G. Barber continue as non-executive directors, and three new directors appointed are Mr. G. A. Jones, secretary of the company, Mr. O. B. Mortimer, sales manager, and Mr. C. W. Parrott, works manager.

STEWARTS AND LLOYDS, LIMITED—Mr. J. G. Stewart has joined the board.

FOUNDRY EQUIPMENT & L. & Y. HOLDINGS, LIMITED—Mr. Wilfrid E. Nixon has joined the board.

BRITISH STEEL CONSTRUCTIONS (BIRMINGHAM), LIMITED—Mr. J. A. Burns has joined the board.

DUDLEY DROP FORGING COMPANY, LIMITED—Mr. Geoffrey Race and Mr. Charles D. Garner have joined the board.

TWYFORDS, LIMITED—Mr. David Thurlow Barritt, joint managing director of Simon-Carves, Limited, has joined the board.

BRITISH ELECTRIC TRACTION COMPANY, LIMITED—Mr. Paul Adorian has been appointed to the board in succession to Mr. William T. James who is retiring.

NCK-RAPIER, LIMITED—Mr. I. S. Whiteman, general manager, has been appointed a director of the company—a member of the Newton Chambers & Company, Limited, group.

WEDNESBURY TUBE COMPANY, LIMITED—Mr. P. J. Custis, chief accountant, and Mr. D. E. Drake, secretary, will join the board on January 1, 1961, while still continuing their present duties.

JOHN BAKER & SONS, LIMITED—Mr. M. J. Hill, chairman and managing director, has resigned on account of ill health. Mr. A. H. M. Greenstreet has joined the board as sales director.

BRITISH HYDROCARBON CHEMICALS, LIMITED—Mr. C. E. Evans has been appointed managing director. Mr. M. A. L. Banks, Mr. A. F. McDonald, and Mr. R. B. Southall have joined the board.

A. REYROLLE & COMPANY, LIMITED—Sir John Wrightson, chairman and managing director of Head Wrightson & Company, Limited, has joined the board and Mr. W. Gray has been co-opted as a director.

CLAY CROSS (IRON & FOUNDRIES), LIMITED—Mr. J. D. Silk, commercial manager, Mr. J. D. Hullock, general foundries manager, and Mr. H. O. W. Hiley, secretary, have been appointed additional directors and will retain their present positions.

GLENFIELD & KENNEDY, LIMITED—Mr. J. Douglas Latta, who was recently appointed a director of the parent company, Glenfield & Kennedy Holdings, Limited, has joined the board and has been appointed chairman. Mr. W. B. Trenholme, general works manager at Kilmarnock, has been appointed a director with effect from January 1, 1961.

HORSELEY BRIDGE & THOMAS PIGGOTT, LIMITED—Mr. Jas. S. Christie has resigned as joint managing director, but will remain on the board as finance director. He has also resigned from the board of its subsidiary, Carter-Horseley (Engineers), Limited, and has been appointed deputy chairman of Scotcros, Limited, and of Mechans, Limited. Mr. V. Senior will remain as sole managing director of Horseley Bridge & Thomas Piggott.

MASSEY-FERGUSON (UNITED KINGDOM), LIMITED—Mr. A. A. Thornbrough has resigned as managing director following the appointment of Mr. G. A. Hunt to that post. Mr. E. W. Young has resigned as deputy managing director, but both he and Mr. Thornbrough retain their directorships. Mr. R. W. Main and Mr. W. K. Mounfield have been appointed directors of the parent company, Massey-Ferguson.

New Deputy Chairman of Vickers

DEPUTY chairman of Vickers, Limited, the engineering group, as from January 1 is to be Maj.-Gen. Sir Charles Dunphie. He is to retain his present posts of chairman of the Vickers-Armstrongs group of aircraft, shipbuilding, engineering, and tractor companies, and as managing director of Vickers.

Maj.-Gen. Dunphie's other directorships include those with the Vanderbijl Engineering Corporation, Limited, the Westminster Bank, Limited, and Vickers subsidiary and associated companies.

AUSTRO RUSSIAN TRADE

UNDER a trade agreement signed recently, Austria will import from Russia annually, over the period 1961-65, 900,000 metric tons of hard coal (minimum), 50,000 metric tons of coke, and 10,000 tons of coal tar. Austria has also engaged to take 425,000 metric tons of iron ore in 1961, 475,000 tons in 1962, and 500,000 tons annually in the three following years, in addition to 10,000 tons of ferro-alloys in 1961 and 1962 and 12,000 tons annually in 1963, 1964, and 1965.

Russia will import from Austria 110,000 metric tons of rolled products in 1961, 130,000 tons in 1962, 145,000 tons in 1963, 155,000 tons in 1964, and 160,000 tons in 1965.

Natural Gas in French Blast Furnaces

FIRST reports have now been issued of the experiments started by the French steel industry at the end of 1959 aimed at reducing coke consumption in blast furnaces by the introduction of natural gas. At the Boucau, near Bayonne, plant of Compagnie des Ateliers et Forges de la Loire, it is stated, tests have shown that by using natural gas, coke consumption in blast furnaces can be lowered by 17 per cent.

The experiments are being continued, under the sponsorship of the French steel producers, the nationalized French gas concern—Gaz de France—and the Algerian Department, which is interested in the process with regard to the new steel complex being built in the Algerian town of Bône. The success of the experiments could improve considerably the economy of the steel industry in mid and southern France which could use the natural gas from the Lacq reserves, while the Bône plant could use gas from the Sahara.

African Notes

INDUSTRIAL EXPANSION

Steel and Coal By-products

PLANS for a 12-year expansion programme which will cost between £270,000,000 and £280,000,000 have been announced by Dr. F. Meyer, chairman of the South African Iron and Steel Industrial Corporation, Limited. Domestic requirements of steel products now manufactured by Iscor are estimated to be in the region of 4,350,000 to 4,500,000 ingot tons by 1972 and this means that the company will have to increase its annual output by between 2,000,000 and 2,150,000 ingot tons. The company is also planning development of its export trade.

Dr. Meyer also reported that the current expansion programme which is costing about £56,000,000, will be completed within the next 12 months and will raise the company's production to about 2,350,000 ingot tons of steel a year. The 1964-65 target, however, requires an additional 500,000 tons a year.

So that local engineering and other firms could do as much as possible of the manufacture in connection with the extensions within the prescribed delivery dates, thereby keeping the amount of imported plant and equipment to a minimum, Iscor has planned to execute its development programme in consecutive steps, rather than all at once.

Doubling of Ore Supplies

Iscor's 12-year project will mean an eventual doubling in its demand for iron ore, which currently is about 3,000,000 tons a year. No difficulty is expected in getting ore for a long period from the known high-grade deposits. According to estimates there are at least 1,300,000,000 tons in the Postmasburg field in Cape Province, 6,000,000,000 tons in the Pretoria series of the Transvaal, and a billion tons of potential ore in other areas of the Transvaal and Griqualand West.

At present the two main sources being drawn upon are Thabazimbi and Sishen in the Postmaburg area, while exploratory work is being undertaken in the Pochefstroom-Wolmaransstad area. Iscor owns the mineral rights over the Paardekop deposits, which are estimated to contain some 50,000,000 tons of ore. Extension of the Potchefstroom-Fochville railway line to Vereeniging could be of major importance in the development of Western Transvaal deposits for the supply of ore to the Vanderbijl works.

Another big expansion plan is also announced—this time by Sasol, the State-sponsored South African Coal, Oil & Gas Corporation. The chairman, Dr. Frans Dutoit, said recently that the company, which is principally engaged in producing oil and by-products from low-grade coal, is to spend a further £30,000,000 to £32,000,000 in increasing its plant at Sasolburg to double the present output. By 1968 production is expected to reach £18,000,000 value annually, compared with £8,000,000 this year and £665,000 five years ago. The proposed expansion would be financed largely by Sasol's own funds.

Warning to investors in the coal industry not to rely too heavily on the long-term benefits from South Africa's coal exports to the Far East is given by Mr. T. Coulter in the annual report of South African Coal Estates, Limited. Although India's ban on coal and coke exports has improved the short-term outlook, he believes that the long-term value of these markets will depend on the economic and political policies adopted by the governments of Far Eastern coal-producing and consuming countries.

Two new 700 ft. shafts are being sunk at the Dannhauser mine of Durban Navigation Collieries, Limited, in connection with Iscor's current expanding production programme. Higher output at the colliery is necessary to ensure supplies of coking coal. The shafts, which are being sunk by Roberts Construction Company, Limited, will be concrete lined throughout.

New incline shaft is to be sunk at Vierfontein Colliery to gain access to the area previously served by the East shaft, which was closed last March following subsidence. It will be sunk 4,000 ft. south-east of the East shaft, and is expected to be in operation in the second quarter of 1961.

As one result of the changeover of the Nigerian railways to diesel traction and the increased electrification of the country, difficulties are being experienced by the Nigerian Coal Corporation, Limited. Efforts to market Nigerian coal in Japan have failed and some mines belonging to the company have had to be closed and workers laid off. NCC has asked its Government to review the balance of trade with Japan.

The Anglo-American Corporation of South Africa, Limited, however, is seeking to negotiate a long-term contract of considerable proportions for imports of iron ore from Swaziland to Japan. Agreement in principle has been reached on imports into Japan of some 10,000,000 tons of ore over 10 years, the contract to start in 1963.

In the report of an economic survey into the natural resources of the High Commission Territories—Basutoland, Bechuanaland, and Swaziland—published recently, it is stated that there are two coal seams which could be exploited. One is on the railway line south of Mahalapye and the other to the West of Palapye. Large reserves of good medium South African quality coal have already been proved. It could only be sold competitively outside the territory if it could be raised fairly cheaply, but the disposition of the seams are such that open-cast mining could be employed.

Order for 80 tons of spring steel in various sizes in small flats was recently exported to Auckland and Wellington, NZ, by the Union Steel Corporation (of South Africa), Limited.

Appointments

Wild-Barfield Internal Reorganization

IN order to cope with expanding business, Wild-Barfield Electric Furnaces, Limited, Watford (Herts), has carried out some internal reorganization and made some new appointments as follows:—Mr. W. R. BREW, executive manager (engineering); Mr. F. I. GLADWIN, executive manager (commercial); Mr. O. V. METCALFE, executive manager (production); Mr. R. C. RAY, sales manager.

Mr. Brew has been with the company since 1934 and has been closely connected with its technical activities. Mr. Gladwin was with the Arc Manufacturing Company, Limited, (subsequently taken over by Wickman, Limited), and was seconded to Applied High Frequency, Limited, as technical sales manager. The company was acquired by Wild-Barfield in 1955. Mr. Metcalfe joined the company in 1933 and was appointed works manager in 1938. Mr. Ray was appointed manager of the sales office in 1957, having joined Wild-Barfield in 1937.

Mr. E. R. GRIFFITHS has been appointed deputy secretary of Monsanto Chemicals, Limited.

Mr. M. A. GRIFFITHS-JONES is to succeed Mr. A. C. Stewart as London sales manager for Chloride Batteries, Limited. Mr. Stewart will remain with the firm in a consultative capacity until his impending retirement.

Following the retirement due to ill-health of Mr. J. Mair, Mr. D. HAMMOND has been appointed safety officer at Barony Colliery (Ayrshire). Mr. J. HARRIS has been appointed chief mechanical engineer in succession to Mr. W. Lindsay, who has resigned.

Mr. E. J. HASLOCK has been appointed manager of the Yorkshire area of the Electric Construction Company, Limited, as from January 1, 1961, in succession to Mr. D. A. Laverack who is resigning because of ill health. Mr. Laverack will continue in a consultant capacity.

Mr. E. A. S. (PETER) COTTON has joined the public relations division of Simms Motor & Electronics Corporation, Limited. Mr. Cotton gained wide engineering experience with such firms as Brush Electrical Engineering Company, Limited, British Oxygen Engineering, Limited, and the Metal Box Company, Limited, before taking up technical journalism.

As from January 1, 1961, Mr. A. C. MACKESY, a director of Smith's Dock Company, Limited, will become general manager of the North Shields yard, and Mr. E. H. VIE, in addition to being shipyard manager at Southbank, Middlesbrough, becomes assistant general manager of that yard. Mr. ALEX BOWMAN, dock manager at North Shields, is to be succeeded when he retires in April, 1961, by the present assistant dock manager, Mr. DAVID DAVIE.

MR. A. G. THORBURN, machine shop manager of the Distington Engineering Company, Limited, a subsidiary of the United Steel Companies, Limited, has been appointed quality control engineer responsible to the general manager for quality control and inspection. CMNDR. M. G. LYNE, quality control engineer, will become chief planning engineer responsible to the production manager (engineering) for planning, estimating, progress and shop loading and ancillary departments, and Mr. J. LOWE, assistant machine shop manager, is appointed acting machine shop manager. The new posts are effective from January 1.

To Head South Wales Coal Board

NEXT move in a career devoted to the mining industry will, for Mr. A. H. Kellett, be from Durham, where he was educated, to South Wales. He is at present deputy chairman of the Durham Divisional Coal Board and has been appointed to succeed Mr. D. M. Rees as chairman of the South Western Divisional Coal Board. Mr. Rees is resigning because of ill health.

Mr. Alfred Henry Kellett, who is 56, was educated at the Bow School, Durham, and Rossall. At Cambridge he took an honours degree in mechanical sciences and, subsequently, when a mining student with Dorman Long & Company, Limited, spent two years at Birmingham University where he took a B.Sc. honours degree in mining.

After obtaining his mining degree, Mr. Kellett was articled to Mr. Charles Howson, Dorman Long's chief mining agent. In 1928 he joined his father, the late Mr. M. H. Kellett, who was managing director of the Washington Coal Company, Limited, and associated companies, and on the death of his father in 1940, succeeded him as managing director. He held that position until vesting day.

From March, 1947, to May, 1950, he was deputy general manager of No. 1 Area, Northern Divisional Coal Board, and when the division was reorganized, he was appointed Area production manager of No. 1 Area in the newly-created Durham Division. His next appointment was as general manager, No. 2 Area, in the same division, in October, 1950, and he was appointed deputy chairman of the division in September last year.

Welsh NUM Seeks Support for Fuel Policy

"UNLESS sufficient men are attracted there will be neither miners nor the pits to supply the country with coal," Mr. Will Whitehead, president of the South Wales Area of the National Union of Mineworkers, said last week. He was commenting on a decision of the Area executive council to convene a conference of other unions and trade councils in February to explain the importance of a national fuel policy. "We feel it is necessary to point out the dangers of permitting the industry to run down to the point of no return," he said.

"After this conference other sections of the trade union and labour movement may be more articulate in supporting us," Mr. Whitehead said.

Declaring that the future of the coal industry depended on its ability to compete with oil, Mr. Will Paynter, national secretary of the NUM, in a speech at Ammanford last weekend, urged the Government to pursue a policy that would restore confidence in the industry. In the latter months of this year there had been some increase in juvenile and other recruitment, but he believed that no substantial change was likely to take place in the industry's ability to attract or hold manpower unless some policy was pursued to restore confidence in the future of coal.

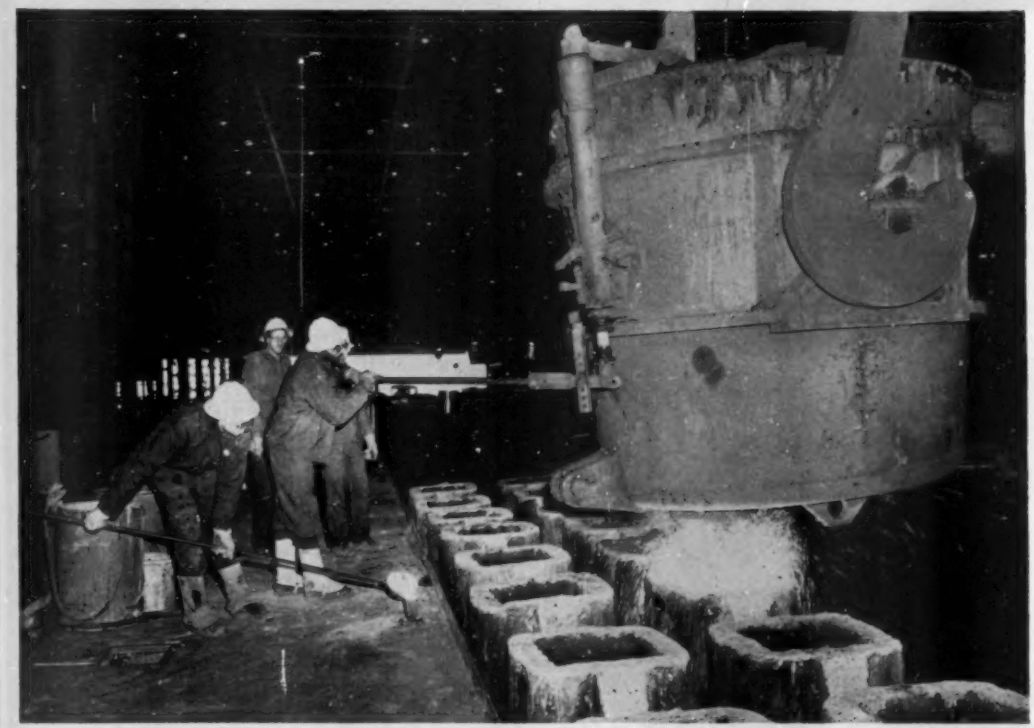
Newly-created post of vice-president, international, of the Yale & Towne Manufacturing Company, is to be assumed by Mr. HAROLD P. VALENTINE.

SPECTRUM ANALYSIS *in an American cupola-converter steelworks*

SPECTRUM analysis is fundamentally the analysis of a substance by observation of its spectrum. It is particularly useful in the iron and steel industry for the rapid analysis of a steel bath and estimation of alloy additions required to meet a specification. When this method replaced the conventional chemical analysis for the assay of iron and steel samples in steelworks, it not only eliminated much of the drudgery associated with routine laboratory work, but it facilitated accurate control of the metal during processing; enabling the laboratory—for the first time—to cope with rapid production techniques in the works.

This is exemplified by the experience of the Acme Steel Company's plant, a $35,000,000 project, at Riverdale, South Chicago, which is an unqualified success. As one of America's largest producers of steel for special applications, Acme Steel is called upon to fill multiple small orders, often to rigid and exacting specifications.

From a quality control viewpoint, part of that

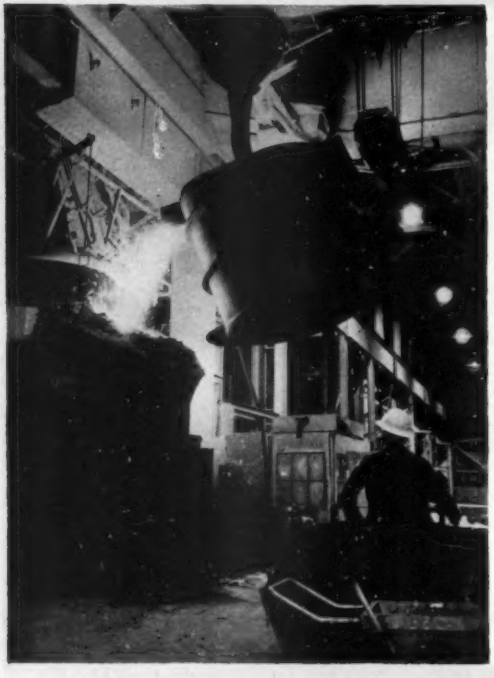


TAKING A TEST SPECIMEN. THIS WILL BE DELIVERED TO THE LABORATORY, ANALYZED, AND REPORTED ON IN LESS THAN 10 MINUTES.

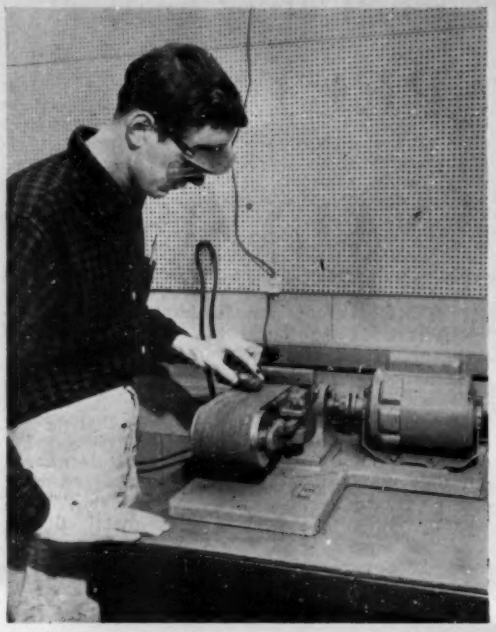
success is due to the modern metallurgical laboratory which has been established there, featuring the latest equipment, including the well-known Baird-Atomic direct reading spectrometer for obtaining quick and accurate analysis of each heat. Thus, the modern process design, combining for the first time continuous hot-blast cupolas (which are the world's largest) with oxygen conversion steelmaking, permits Acme Steel to produce many heats of varying steel grades in the same equipment on the same day.

This technological achievement of speed and flexibility combined with a high degree of quality control would be difficult, if not impossible, were it not for the speed and accuracy of the Baird-Atomic direct reader.

Although the use of this instrument in metallurgy and manufacturing operations is not new, Acme's use of it is unique in at least one respect. While other steelmakers prefer modern spectroscopy to conventional chemical methods of testing, to save time, money, or to obtain other advantages, there was really no choice in the case of Acme. With a tap-to-tap time as short as 40 min., coupled with rigid specifications, it was imperative that the most rapid, accurate equipment and methods for chemical analysis be employed. The analytical combination chosen for testing the ferrous metals consists of the use of induction furnaces for determining carbon and sulphur, and the Baird-Atomic direct reader for all other elements to be determined in iron and steel as well as slag. With this combination, a complete analysis can be reported within 6 min.



IN THE PLANT OF THE ACME STEEL COMPANY AT RIVERDALE, SOUTH CHICAGO. THE CONVERTER IS BEING CHARGED WITH MOLTEN CUPOLA IRON IN PREPARATION FOR MAKING A HEAT OF STEEL.



POLISHING A SAMPLE ON A BELT SANDER PRIOR TO INSERTING THE SAMPLE IN THE BAIRD-ATOMIC DIRECT READER. THIS TREATMENT ON THE SANDER PRODUCES A SURFACE HAVING OPTIMUM PROPERTIES FOR ANALYSIS IN THE DIRECT READER.

Method of Usage

Specifically, Acme Steel uses the direct reader in the following manner. Firstly, one of the melting shop personnel will draw a sample of metal or slag on a predetermined schedule and deliver it to the laboratory. In this way the following samples are received:—Two cupola iron samples per hour; one cupola slag sample per hour; one sample from the hot-metal mixer per heat; two preliminary heat samples (average); one converter slag sample per heat; and two ingot samples for minimum ladle analysis. This amounts to nine samples per hour, or 72 per eight-hour shift. Ten elements are determined in each metal sample and six in each slag sample. Based on the foregoing figures, this amounts to some 656 determinations per shift. With additional samples submitted from the main laboratory, the total determinations

PLACING A SAMPLE IN THE ARC STAND OF THE DIRECT READER. DURING ARCING, CHARACTERISTIC SPECTRAL LINES ARE EMITTED WHICH ARE THEN MEASURED AND IDENTIFIED BY THE BAIRD-ATOMIC DIRECT READING SPECTROMETER.

per shift may be as high as 750. In handling these, the laboratory personnel cool the sample and prepare the surface by polishing on a belt sander. The sample so treated, which now has a uniform surface and so is ideally suited for the spectrum analysis method, is inserted into the arc stand of the direct reader. During arcing, characteristic spectral lines are emitted which are then measured and identified by the direct reader. The results are reported back to the works personnel, and the total time required between receiving the sample and reporting on it is generally 5 to 10 min., depending on whether a partial or complete determination is required. When slag samples are being dealt with, the preparation of these is different from the metal samples; the slag is briquetted in preparation for analysis.

Iron and steel samples are analyzed for carbon, manganese, phosphorus, sulphur, silicon, copper, nickel, chromium, molybdenum, and tin. All but carbon and sulphur are determined on the direct reader. Slags are tested for calcium oxide, silica, manganese oxide, magnesium oxide, alumina, and iron—all on the direct reader. Results are reported back to the melting shop, where the cupola and converter operators use the analyses as a guide to make appropriate adjustments in operating conditions, so that the final product will meet the required specifications. Due to the quick analysis, operators are able to adjust the formulations to meet accurately the requirements of varying specifications. After all additions are made, and the heat of steel has been tapped into a ladle, additional samples are taken as the steel is being poured into the ingot moulds. These samples provide the official analysis of the heat—the ladle analysis—and also indicate the uniformity of the heat.

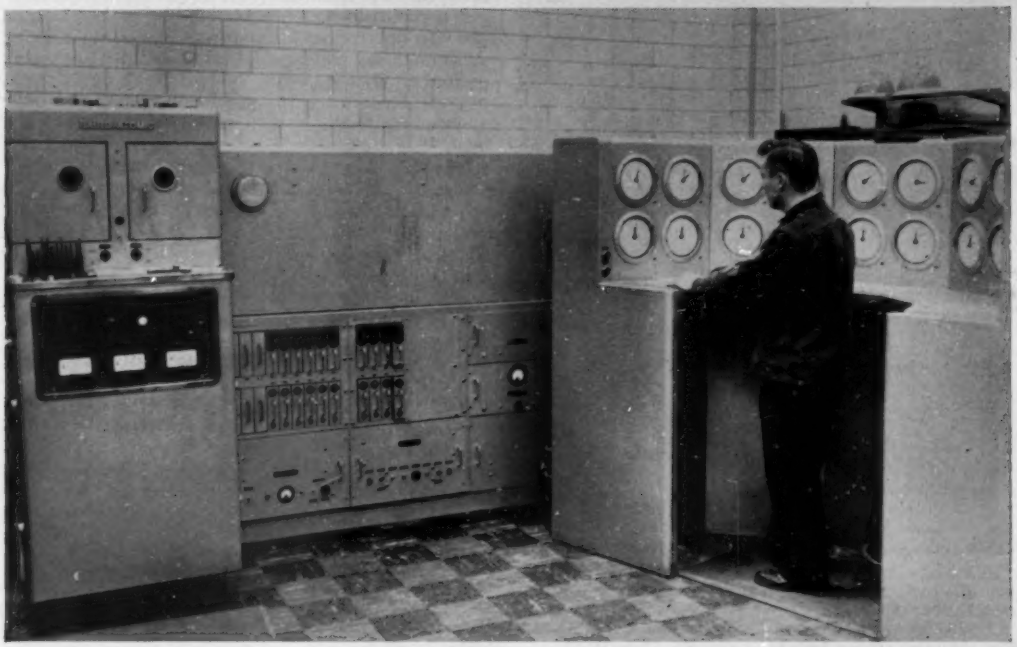
Reliable Operation Essential

At Acme Steel's plant, the Baird-Atomic direct reader is in action 24 hr. a day, seven days a week. Because there is no conventional "wet" laboratory associated with the melting shop to function as a standby in case of equipment failure, reliable operation of the direct reader is essential. Since dependence on the instrument is absolute, the Acme Steel Company, at the time of installation, provided reserve power supplies and a standby control chassis, in addition to the spare amplifier and relay equipment provided by the Baird-Atomic Company.

Such an installation, coupled with intensive maintenance, has kept the rare periods of downtime to a matter of a few minutes only. The laboratory at the Acme plant is in charge of a chief chemist,

THE OPERATOR IS BRIQUETTING SLAG SAMPLES READY FOR ANALYSIS IN THE DIRECT READER.

while the maintenance and calibration of the direct reader are the responsibility of a spectrographer. While this work requires considerable electronic and spectrochemical knowledge the routine operation of the equipment can be, and is, performed by less highly trained men.



OVERALL VIEW OF THE BAIRD-ATOMIC DIRECT READING SPECTROMETER. THE DIALS ON THE RIGHT ARE CALIBRATED TO SHOW DIRECT PERCENTAGE CONCENTRATION OF MANGANESE, PHOSPHORUS, SILICA, COPPER, NICKEL, CHROMIUM, MOLYBDENUM, AND TIN IN IRON AND STEEL SAMPLES. WITH SLAG SAMPLES, CALCIUM OXIDE, SILICA, MANGANESE OXIDE, ALUMINA, AND IRON ARE CHECKED.

STEPS TO EXPAND CZECH STEEL OUTPUT

PROGRAMME for increases in coal and electricity output that will, in turn, help the Czechoslovak iron and steel industry is announced in Prague, CTK News Agency reports. It is intended that by 1965 the country will be producing 35,500,000 tons of hard coal and 73,200,000 tons of brown coal. In the period 1961-65, the output of hard and brown coal will each be raised by approximately 3,000,000 tons over the figure for this year.

The higher coal output will be achieved in the main through further mechanization. In the largest hard coal area, Ostrava-Karviná, it is intended that at least 33 per cent. of extraction shall be by mechanical means at the end of the period, and there will be a fourfold increase in mechanized extraction of brown coal.

These developments in coal mining will also influence electricity output. In 1965, 37,700,000,000 kWh will be the figure involved. New power plants will be built near the mines and it is expected that in 1965 fuel consumption in electric power plants will have been reduced from this year's 0.520 kg. to 0.435 kg. per kWh, which may lead to a further reduction in the cost of electricity to the consumer. Taken together, coal and electricity production increases should be reflected in higher outputs of pig-iron, at 7,650,000 tons, and crude steel, at 10,500,000 tons, respectively, in 1965.

SVENSKA METALVERKEN, Sweden's leading producer of non-ferrous metal products, is to carry out a major expansion of the Finspång works, as the result of which annual productive capacity for aluminium semi-manufactures will be increased from 20,000 to 30,000 tons for rolled products, and from 2,500 to 3,500 tons for pressed products.

Value of the Australian mineral production has increased from about £61,500,000 in 1948 to £211,600,000 in 1957, or three and a half times. The mineral industry is well diversified and covers a wide variety of mineral raw materials. The principal products are the base metals—lead, zinc, and copper—coal, iron and steel, and also gold. Coal accounts for about 25 per cent. of the annual total by value, and a further 25 per cent. is represented by the products of the lead-zinc industry. The balance—about 50 per cent.—is represented by a wide range of raw materials of industry—some 80 in number[1].

COALS AND COALFIELDS OF *New South Wales*

by A. NELSON

NEW SOUTH WALES is the leading coal-producing State of Australia. In fact, the Australian black coal industry is dominated by the production and distribution of New South Wales coal, which is exported to all States of the Commonwealth. Its main coalfields are located along the eastern coastal belt, readily accessible for transport services and favoured with good rainfall and water supply. The main outlet points, for export purposes are Newcastle, Sydney, and Port Kembla. Newcastle is the principal coal-shipping port and serves the coalfields of South Maitland, Newdell-Muswellbrook, and Newcastle.

The coalfields are, therefore, very favourably disposed for the development of secondary industries within the zone of the larger cities. Coalfields further inland, which are now being investigated or developed, should foster the further dispersal of secondary industries.

It is a happy chance that where the coal-bearing lands exist are also the areas in which settlement was possible in the early days of Australia and where the largest centres of population are now located. The occurrence of coking and gas coals close to the eastern seaboard of the continent and their rarity elsewhere, has played an important part in the industrial economy of Australia.

Geology and Geography

New South Wales is fortunate in that the coal produced in the Main Coal Province has ready access by both road and rail to the adjacent seaboard and the State's principal industrial centres of Sydney, Newcastle, and Wollongong. The basis of the classification is primarily into coal provinces; these are subdivided into coalfields, which are in turn subdivided into coal districts.

The age of the coal deposits of economic importance ranges from Permian to Jurassic and they consist almost entirely of good quality bituminous coals. The younger brown coals (or lignites) of Tertiary age, which are so abundantly developed further south in Victoria, do not occur in New South Wales. Likewise, the carboniferous system, in which coal was so prolifically developed in the northern hemisphere, is devoid of commercial coal deposits in New South Wales and, in fact, elsewhere throughout the whole of Australia.

The geology of the New South Wales coalfields may be briefly summarized as follows:—

MESOZOIC	Cretaceous	Devoid of commercial coal seams.
	Jurassic	Clarence-Tweed Coalfield and Elong District of Western Coalfield.
	Triassic	Nymboida Coalfield.
PALAEOZOIC	Permian Upper Coal Measures	Developed throughout Main Coal Province.
	Upper Marine Series	Devoid of commercial seams.
	Lower Coal Measures	Main development in Northern, North-Western, and Ashford Coalfields.
	Lower Marine Series	Poor quality seams developed in parts of the Northern and North-Western Coalfields.
	Carboniferous	Devoid of commercial seams.

The Oaklands Coalfield is also of Permian age. This field occupies a separate basin not directly connected with that of the Main Coal Province. Beyond stating that the coal was formed during the Permian era, it is difficult to give it an exact age.

The Permian System

The Permian system is represented in the Main, Ashford, and Riverina Provinces, and it also occurs

along the north coast, south of the Far North Coast Province. In the last locality, however, only the Lower Marine Series is represented. The most recent classification of these strata is as given below. This classification is used as a basis for the following brief account of the Permian system in the Main and Ashford Provinces.

Upper Coal Measures: Newcastle Stage; Tomago Stage.
Upper Marine Series: Mulbring Stage; Muree Stage; Branxton Stage.
Lower or Greta Coal Measures.
Lower Marine Series: Farley Stage; Rutherford Stage; Allandale Stage; Lochinvar Stage.

Lower Marine Series

Exposures of these rocks are confined to the Northern and North-Western fields. They are overlapped to the south and west by younger Permian beds and their exact extent in these directions is not known. In the Lower Hunter Valley they occupy the core of the Lochinvar Dome, a feature which dominates the geology of that area. The beds are richly fossiliferous along many horizons. North-west of the Lochinvar Dome there is a dominantly synclinal area which separates the Lochinvar and Muswellbrook Domes.

Further north, in the vicinity of the Liverpool Range, within the Temi and Werrie Basins, the section comprises a basal group of freshwater beds (Temi Group) overlain by a considerable thickness of Werrie Basalts. Seams of oil shale and coal occur in the Temi Group, but in most instances the seams have been affected by igneous activity. Up to the present the coal has not been successfully exploited.

Lower or Greta Coal Measures

Within the Main Coal Province, the Greta Coal Measures are confined to the Northern and North-Western fields, except for a minor development in the Clyde River District of the Southern field. In the type area within the Maitland-Cessnock-Greta District the measures outcrop around the margins of the Lochinvar Dome, ranging from 100 to 300 ft. in thickness and consisting essentially of fine conglomerate with lenticular beds of sandstone, clay shales, and coal seams. The two seams generally recognized as being present in the Greta Measures are:—(1) Top or Main Greta Seam and (2) Lower or Homeville Seam. The Main Greta Seam is up to 34 ft. and the Homeville Seam up to 22 ft. in thickness. Both seams are subject to splitting.

The Greta Measures do not outcrop in the Singleton area, but around the Muswellbrook Dome they form a prominent feature. The sediments are mainly shales and sandy shales with numerous coal seams. The total thickness has been given as 370 ft. In the Scone-Wingen district the Greta Coal Measures outcrop prominently, generally with steep dips, until they are cut off on the north by the Murrurundi Fault. At least one seam is known to be present and is stated to be 30 ft. thick at one place. North of the Liverpool Range the first outcrop of the Greta Measures is near Willow Tree, where they consist of shales, sandstones, grits, and conglomerates.

The Coal Measures of the Ashford field have also been correlated with the Greta Measures. The sediments are about 600 ft. thick and were deposited with an almost right-angled unconformity on the Lower Carboniferous beds. They are composed of conglomerates with sandstones, shales, and coal seams. The main or Ashford Seam occurs close to the base of the group and, including bands, averages about 30 ft. in thickness.

Upper Marine Series

This formation ranges from 4,000 to 6,000 ft. in thickness and consists mainly of conglomerates, sandstones, tuffs, and shales with erratics along some horizons. The series is devoid of workable coal seams.

Upper Coal Measures

The Newcastle Stage of the Upper Coal Measures is the most extensive coal-bearing series in New South Wales and occurs throughout the Main Coal Province, except for a few sections around the outer margins. On the other hand, the development of the Tomago Coal Measures was confined essentially to the Hunter Valley. Both the seams and the intercalated beds in the Tomago Stage are characterized by their lenticularity and impersistence. The type area at East Maitland lies to the east of the Lochinvar Dome. The uppermost two seams are known as the Buttai seams. They are separated by 300 to 350 ft. of sandstone from the overlying Sandgate seams. The Donaldson, Big Ben, and Tomago Thin seams are referred to as the Four Mile Creek seams. Practically the whole output from the Tomago Stage in the East Maitland area has come from the Donaldson, Big Ben, and Rathluba seams.

Northern Coalfield

The type area is located in the Hunter Valley and extends southwards to Lake Macquarie. The sediments comprise sandstones, conglomerates, shales, cherts, and at least 15 coal seams, of which 11 are worked. An interesting feature of the development of the seams is the tendency for a southerly migration of the areas, of maximum development of the younger seams, indicating a contraction of the basin of deposition.

North-Western Coalfield

The Upper Coal Measures in the North-Western field appear to be restricted to the Newcastle Stage as in the Western field. The main outcrop is located west of the Namoi and Mooki rivers and extends from the south of Breeza northwards to between Boggabri and Narrabri. In the type area near Gunnedah the beds have been named the Black Jack Formation. Their maximum development is about 550 ft. thick, comprising shales, sandstones, conglomerates, cherts, coal seams, and thin bands of limestone.

Southern Coalfield

The total thickness of Upper (or Illawarra) Coal Measures in the Southern field varies considerably, ranging from about 40 ft. at the extreme southern end on the slopes of Cambewarra Mountain to over 1,000 ft. at the northern end, where the measures pass under the overlying Triassic beds. There are six main coal seams which have been named. The lower part of the sequence may be the equivalent of the Tomago Coal Series, but there is no definite evidence to prove or disprove this suggestion.

South-Western Coalfield

This coalfield comprises two districts. The Wollondilly-Nattai District, in the Burragorang Valley, is characterized by a commercial development of the top or Bulli Seam. The Moss Vale-Berrima District contains a workable section of the Wongawilli Seam. From known exposures, the Bulli Seam attains a maximum thickness of about 9 ft. in Brimstone Gulley, while the Wongawilli Seam, although of widespread occurrence in the coalfield, is of commercial grade only in the Moss Vale-Berrima District. There are several occurrences of oil shale between the horizons of the Wongawilli Seam and the Lithgow Seam of the Western field. The seams are generally thin, but at Joadja some of the richest oil shales in the world occur.

Central Coalfield

The occurrence of coal underneath Sydney had been predicted for many years before it was finally proved in two bores sunk at Cremorne in 1891 and 1893. The former struck the Hop Seam at a depth of 2,800 ft., but the seam (7 ft. 4 in. thick) had been affected by igneous intrusion. The thickness of the seam in the second bore was 10 ft. 3 in. It is generally accepted that the Top Seam under Sydney is to be correlated with the Bulli Seam of the Southern field and perhaps with the Wallarah Seam of the Northern field.

Western Coalfield

The total thickness of the Upper Coal Measures in the Western field ranges from 250 ft. to 440 ft., being commonly 300 to 350 ft. They are considered to represent the Newcastle Stage only—the Tomago Stage being absent. The principal seams are the Katoomba, Dirty, Irondale, and the Lithgow. The Lithgow Seam forms a very persistent horizon between pebbly sandstone beds, known as the Upper and Lower Marangaroo. The main Lithgow section is commonly 7 to 10 ft., of which about 6 ft. is usually worked. Numerous beds of oil shale, some of which are of very high grade, occur in the Western field and many of these deposits have been worked.

Triassic.—The Triassic strata have not been proved to contain coal seams of economic value within the Main Coal Province. The only known commercial coal of Triassic age is restricted to the Nymboida field of the Far North Coast Province. The Nymboida Seam is 3 to 5 ft. in thickness and is of better quality than the Jurassic coals proved up to the present.

Jurassic.—Jurassic Coal Measures occur in the Far North Coast Province and the Elong District of the Western field in the Main Coal Province. The Jurassic beds in the Far North Coast Province are known as the Clarence Series. They occupy a basin extending 120 miles south of Queensland border with a maximum width of 65 miles. They almost completely overlap the Triassic Nymboida Series. Productive coal seams have been confined to the Mallanganee Coal Measures. The seams vary from 2 to 37 ft. in thickness and shale forms the greater part of the seams. The working section is usually less than 6 ft. and the seams are subject to rapid lateral variation in quality and thickness.

Igneous Activity

The coalfields of New South Wales contain intrusions of sills, dykes, and other igneous masses of late Mesozoic and Tertiary age. There is also faulting, mainly of the gravity type, with small vertical displacements. The igneous intrusions are not of great importance geologically, and they have very little influence on the coal reserves of the State. However, this igneous activity has had considerable effect in some localities and has adversely affected the economic development of the seams. Marked alteration of the coal seams has taken place in some areas such as the Nandewar Mountains, Warragundi Complex, the Gib at Bowral, and the sills of the Muswellbrook-Singleton District. Fortunately, however, these areas are away from most of the important productive regions of the Main Coal Province.

The main metamorphic effects are associated with dolerite dykes and sills. Often the alteration of the coal only extends a few inches from the intrusion, but since the igneous masses are often closely spaced, appreciable areas of coal are frequently rendered uneconomic to extract. In areas such as Gunnedah-Curlewis, where the igneous activity has been widespread, the assessment of reserves and planning of mineworkings is difficult. In general, however, igneous intrusions in the Main Coal Province have caused only minor difficulties.[5]

Coal Characteristics

Practically all the New South Wales coal production is from mines operating in the Permian Coal Measures of the Main Coal Province. Small quantities come from Triassic and Jurassic seams in the north-east of the State, and from the Coorabin field in the south. Excepting the sub-bituminous Coorabin coal, all the coal mined in New South Wales falls within the bituminous class as defined by recognized systems of classification.

The two distinct horizons of the Main Coal Province, the Upper and Lower Coal Measures, yield coals showing marked differences in their physical and chemical properties. The Upper Coal Measures provide what might be described as typical banded bituminous coals, in themselves

showing a fair variety of properties and use-classifications. They range, for instance, from the comparatively low-volatile coking coals of the Southern (Illawarra) field, through moderately-coking, medium-volatile steam coals of the Western and Northern fields, to the fairly high-volatile coking coals of the Northern field. Coals of the Upper Measures disclose a wide variation in hardness, from the friable Bulli seam of the Southern field to the hard coal of the Lithgow Seam of the Western field. Upper Measure coals possess a fairly high "intrinsic ash" yield, usually from 8 to 15 per cent. in the coals mined.

Lower Measure coals, often referred to as the Greta coals, because of the main seam of that name, tend to be massive in structure, whereas the coals of the Upper Measures are typically banded. The Lower Coal Measures have their most important development in the Cessnock or "South Maitland" area. They contain bright coal bands and yield a high percentage of volatile matter on destructive distillation. Usually they are weakly-coking with moderately high swelling indices. Their ultimate hydrogen percentages are appreciably higher than those of the coals of the Upper Measures and the sulphur content is sometimes high, but most of the high-sulphur coal is left in the workings. Intrinsic ash is below that of most other Australian coals—the normal range being 5 to 6 per cent.[3]

It follows that the best gas coal comes from the Lower or Greta Coal Measures. The higher volatile content of these seams as compared with those of the Upper Coal Measures may be a reflection of the relatively thin cover of later sediments over the areas in which they were deposited. It should be noted, however, that not all Greta coals possess a high-volatile content, as indicated by the Greta coals with a high fixed carbon content in the North-Western and Ashford fields. The Ashford Seam has a medium-volatile bituminous ranking. Its calorific value places it among the best steam coals in Australia. Ash content is reasonably low. Its low-volatile content (23 to 24 per cent.) makes it unsuitable for the production of gas.

Good quality coking coals occur throughout the Main Coal Province, but the major development has been in the Northern and Southern fields. Coal suitable for the generation of electric power is abundant and the present tendency is to design future power stations to exploit some of the lower grade seams, thus economizing in the use of the better quality gas and coking coals and restricting their use to the purposes for which they are most suitable. ([2] *loc. cit.*)

Reserves

Industrial expansion has been so rapid in Australia during and since the war that coal demands have outstripped the productive capacity of the industry. This exigency led to vigorous exploration and development, both in underground mining and open-cast operations. New South Wales took a major part in these activities because it possessed large virgin areas of bituminous coal. It was viewed as a national necessity that these reserves be developed, or at least established geologically, as a preliminary step to their planned development in the future.

The figures for actual and probable reserves of coal in New South Wales is of the order of 9,000,000,000 tons, mostly of A grade coal, and the possible reserves, including B and C grade coals, are considerable. Some modification of these figures will result from the more detailed data which will be obtained in the course of the geological investigations at present in progress.

Despite these high reserves, the position with regard to coking coal on the Northern field in New South Wales and gas coal is not satisfactory. Because of the very poor recoveries in the Maitland-Cessnock field, and the use of gas coals for other purposes, supplies of gas coal in the State may be very short in about 25 years unless mining and conservation practices improve.

Production and Developments

The black coal industry in the Commonwealth now has a production worth well over £50,000,000 per annum on the average, of which four fifths comes from New South Wales. Coal production in 1958-59 was a record of 15,762,000 tons, which was obtained principally from the major coalfields around the cities of Newcastle, Wollongong, Lithgow, and Cessnock. The output per manshift in 1958-59 was 4.65 tons overall in the underground mines. In June, 1959, 106 mines were in production, employing 13,380 men, and 89.9 per cent. of the output was mechanically loaded. The capital expenditure on improvements in the mines was a maximum at £6,519,300, making a total expenditure during the six years 1953-59 of £32,343,600. For the first six months of 1959, 54.3 per cent. of the coal output was washed.[4] In general, mining conditions are more comparable to those in America than those prevailing in Great Britain. Thick seams and relatively good mining conditions make the New South Wales collieries very favourable for machine mining.

In the Upper Coal Measures around Newcastle, Wollongong, and Lithgow, the seam thicknesses range from 6 to 12 ft. A number of mechanized schemes have been introduced and several collieries operating in the two lower seams are designed for outputs from 2,000 to 3,000 tons a day. Wollongong, some 50 miles by rail south of Sydney, is the centre of activity for the Illawarra coalfield.

The collieries along the coastal belt, north and south of the "twin-cities" of Wollongong-Port Kembla, work three of the several seams available in this area. The seams worked are the Tongarra, Wongawilli, and the Bulli, or No. 1, Seam, which has an average thickness of 7 ft. Several of the collieries are designed for 3,000 tons a day production.

On the Western field, Lithgow, 100 miles west of Sydney, is surrounded by coal-mining developments. The seams are of similar characteristics and geological age to those worked around Newcastle and

Wollongong. The Lithgow Seam is the thickest in the locality and averages 11 ft.

The modernization of Coal Cliff Colliery, at a cost of about £3,500,000, has transformed it into one of Australia's most impressive and technically efficient units. A major producer of hard coking coal for the oversea trade and for metallurgical purposes within the Commonwealth, the mine holds contracts for the supply of 1,229,000 tons of coal to Japanese steelworks over the next five years. The owners of the mine expect its complete development to cost about £4,500,000, providing for the operation of six continuous miner units and a potential output of 3,000 tons per day.

Australia's black coal industry is now more stable and efficient than at any time in its history. It has met its economic problems by pursuing a policy of mechanization, reducing costs and the installation of washing plants to market coal of a specified size and type. The post-war developments are outstanding by advances in mining methods, management, and technical efficiency.

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Dafydd Tomos Surveys

50 Years of AMEME in South Wales

AUTHOR of "The South Wales Story of the Association of Mining Electrical and Mechanical Engineers," just published to celebrate the jubilee of the association's South Wales branch, is Mr. Dafydd Tomos, better known, perhaps, as Mr. David J. Thomas, president of the branch in 1939-40. He writes well and his pen has given us a document that will be found of interest and, indeed, of value, outside of the branch and of the association itself.

The South Wales branch is almost as old as the national association, steps to form the branch having been taken in May, 1909, only a month after the association (known originally as the Society of Mining Electrical Engineers) came into being.

Dafydd Tomos poses the question: "What was the world like in 1909 and particularly the state of affairs in South Wales?" We quote from his reminiscences:—

> King Edward VII was on the throne and the Golden Sovereign was in circulation. The Tzar of Russia paid us a visit and Lloyd George visited Limehouse. The motor car was just a creeping infant. Bleriot flew from Calais to Dover, starting at 4.41 a.m. and landing at 6 a.m. De Havilland made his first aeroplane. The Union of South Africa was formed and the most disastrous earthquake in history took place at Messina, Italy, and Sicily, when 200,000 lives were lost. There was flooding at Cardiff, Port Talbot, and Swansea, and 2 in. of rain fell in Cardiff [a particularly pertinent flashback!]. An extension to Alexandra Docks, Newport, collapsed and 25 were killed, and the Darran Colliery, Bargoed, explosion caused the loss of 26 men's lives.
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> Woolworth's opened its first shop, the errand boys were whistling the latest "Has Anybody Here Seen Kelly?" and "Let's All Go Down The Strand." Theatregoers were enraptured over "The Arcadians" and "Our Miss Gibbs." The labour exchanges were about to be formed and the first old-age pensions were paid. The Miners' 8-hour Act came into force after considerable controversy and Mabon was in his ascendance. The Cambrian dispute, probably the worst in the history of the coalfield, was beginning.
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> Cardiff was advertised as being the first port in the United Kingdom for shipping cleared for foreign countries and British possessions, and the premium port in the world for the shipment of coal. In Swansea, Kings Dock was opened and considered then as one of the largest docks in the world. Powell Duffryn put down the first rescue station at Aberaman and also provided a hospital in the Rhymney Valley. Ocean Coal erected at Treharris the first pithead baths in the coalfield.

Mr. Tomos has more to say about the year 1909 and much more about the earliest days of the South Wales branch of the AMEME and its development down the years. Photographs and biographical details of the presidents year by year are included, together with similar treatment of the Somerset Sub-branch, while, as a grand finale, comes an article on "Future Prospects."

Past and present members of the AMEME will be especially grateful to Dafydd Tomos for his research work and for the splendid way in which he has presented the fruits of his labour.

Utilizing US Lignite Reserves

THE Bureau of Mines, US Department of the Interior, has under study an intensified research programme for utilizing the nation's great reserves of lignite. Possible areas of growth include wider use of the fuel by electric power companies, in processing iron ore, and in producing chemicals.

Good progress, it is reported, is being made in developing equipment to gasify lignite to provide a possible substitute for natural gas as well as a beginning product for chemicals.

New Literature

BOOKLETS, catalogues, and other publications which have recently been received include those mentioned below. Readers wishing to obtain a copy of any of the items referred to should write direct to the address given, at the same time mentioning IRON AND COAL.

MUNICIPAL JOURNAL, LIMITED, 3, Clement's Inn, London, W.C.2—The 1961 edition of the "Municipal Year Book," now available, is of particular value to contractors and suppliers. The price is £5 5s.

BAIRD & TATLOCK (LONDON), LIMITED, Freshwater Road, Chadwell Heath (Essex)—Leaflet No. SL 21 describes the BTL intermediate oven, while anhydric incubators are the subject of leaflet No. SL 22.

INTERNATIONAL COMPUTERS & TABULATORS, LIMITED, Gloucester House, 149, Park Lane, London, W.1—Issue No. 6 of the ICT Magazine contains much that will interest those concerned with office and works administration.

RANSOMES & RAPIER, LIMITED, Waterside Works, Ipswich—Two further pamphlets dealing with RapieR self-priming water pumps are available. They are publication No. 1/1,500 (3PH ships' emergency fire pumps) and No. 1/513A (4P40 pumps).

PEABODY, LIMITED, Peabody House, 300, Vauxhall Bridge Road, London, S.W.1—Details of the improved gas scrubber, which is now fitted with an agglomerating slot stage, are to be found in bulletin LH203-D, an eight-page, well illustrated publication.

NORTH-WESTERN DIVISIONAL COAL BOARD, 40, Portland Street, Manchester 1—Although the November issue of Pitprop has been published somewhat belatedly, it is, nevertheless, welcome. Pitprop, a 12-page news-sheet of the division, is very well compiled and attractively made up.

BRITISH INSTITUTE OF MANAGEMENT, Management House, 80, Fetter Lane, London, E.C.4—"Case Study Practice," the latest BIM publication, is a handbook intended to show the value of case studies in management training in large and small firms, the civil service, colleges of commerce and technology, and universities. The price is 12s. 6d. (12s. 11d. by post).

GEORGE COHEN 600 GROUP, LIMITED, 600, Wood Lane, London, W.12—The Christmas issue of the 600 Magazine arrived in good time for the festive season, but it is likely that many of its regular readers would steal away from the celebration to browse through it even if it were delivered on Christmas Day itself. It is a splendid issue in every respect.

J. H. FENNER & COMPANY, LIMITED, Hull (Yorks)—Among recent visitors to the Marfleet factory was Sir Leonard Hutton. Referring to his visit, the December issue of the V-Belt Journal states: "Although we have only one more to go for our hundred, there is no trace of the 'nervous nineties' here at Marfleet. Our drives continue to score at a lively pace, penetrating the power transmission field with a frequency that looks like keeping us at the head of the averages for a long time to come."

TUBE INVESTMENTS, LIMITED, The Adelphi, Strand, London, W.C.2—"This is TI Today" is the well-chosen title of a booklet listing the main companies in the group and their products. TI is a British group of 65 precision tube, aluminium, steel, engineering, and electrical companies with factories in England, Scotland, and Wales. There are 40 subsidiary and associate companies in Argentina, Australia, British East Africa, Canada, Eire, France, Germany, Holland, Norway, Pakistan, Republic of Guinea, South Africa, Southern Rhodesia, and the USA. Many other facts and figures concerning TI are to be found in the booklet, all collated and presented in a very useful form.

EFCO FURNACES, LIMITED, Queens Road, Weybridge (Surrey)—Introducing an article, "When Pig-iron Came from Sows," in the November issue of the Efco Journal, Mr. O. A. Goulden writes: "If you walk through the streets of Tunbridge Wells on the borders of Kent and Sussex today and ask about the iron and steel industry, they will tell you that there is not a blast furnace, foundry, or forge within 50 miles; perhaps one person in a hundred could tell you that there was once an iron industry in that area and would add that the railings of St. Paul's Cathedral were cast at Lamberhurst, 12 miles away." A number of technical contributions go to make up a very interesting issue of the journal.

OLP Developments

WORKING on three shifts at Dillingen, in the Saar, is a 30-ton converter for the conversion of high-phosphorus hot metal to steel by the oxygen/lime powder method. Lining lives of 200 heats are being obtained, utilizing a combination of metallurgical and technological features detailed from the start by IRSID, the French iron and steel research institute, which has been a pioneer in this type of lime blowing.

It is important to avoid foaming of a siliceous slag at the beginning of the blow, and incorrect lime consumption may give this. The complete lime-blowing installation devised by IRSID after several years of research gives the necessary reliability and flexibility. Dephosphorization is well under control, and there is no difficulty in making regularly low-carbon steels with low-phosphorus content. Moreover, from recent developments, it appears that carbon steels of up to at least 0.5 per cent. C can be made from 1.8 per cent. P hot metal.

At USINOR, Denain, a 60-ton converter blowing high-phosphorus hot metal has just started. Lime powder rates of ½ ton/min. are reached. In the new plant under construction at Dunkirk, hematite hot metal will be refined in 140-ton converters by the OLP process.

THE CASE FOR reforming methods of applying surtax is made out strongly in a new booklet, "A Tax on Progress," just issued by the National Union of Manufacturers, 6, Holborn Viaduct, London, E.C.1. The booklet recommends that taxation should be so graded that no one would be left with less than a quarter of his earnings.

BURNING OUT OF CONVERTER SKULLS

INJECTION OF OXYGEN DURING BLOWING

In this article, Walter Bading, of Huckingen, describes a method of preventing the formation of skulls at the converter mouth or subsequently melting them away by oxygen enrichment of the still partially unburnt gases in the converter hood. The method, devised for automatic operation, is now in use on four converters. The article is translated from Stahl und Eisen, 80 (1960), *June* 23, *pp.* 861-862.

REMOVAL of converter skulls from the converter nose is very time-wasting in the case of bottom-blown basic-Bessemer converters and is particularly difficult in large converters. It is not surprising, therefore, that many suggestions have been put forward aiming at cleaning the converter noses by mechanical means. Such arrangements have hitherto been unsuccessful except at the price of a greater expenditure of time.

The bar or a special section therefore always remained the manual tool of the basic-Bessemer operator for pressing out the skulls at the nose. In large converters, the work is simplified by scoring the skulls with oxygen or a mixture of oxygen and iron powder.

During the oxidation of carbon, carbon-monoxide gas formed inside the converter is not converted into carbon dioxide until it passes out. The obvious suggestion is, therefore, to produce this exothermic reaction in the converter hood by blowing in oxygen carriers and thus use the higher temperature set up locally to melt out the skull that forms. In this way, the nose can either be kept quite clean or skull formation can be checked so effectively that only a cap is formed at the rim of the nose.

As far as is known, tests have already been made in this direction, but have not attained the desired goal.

Conduct of the Tests

In the preliminary tests, at first, simple iron tubes and, later, water-cooled lances were inserted in the converter nose and, first compressed air and, later, oxygen, blown in. No effect could be observed from blowing into the free opening. After the oxygen jet was deflected into the immediate vicinity of the nose skull, however, melting could be seen to occur. Since, however, the insertion and withdrawal of a lance requires a special arrangement which cannot be used in some cases an attempt was made to build a nozzle into the converter hood and thus enable the combustion to carbon dioxide to take place directly at the nose skull. The successful outcome of these attempts confirmed the correctness of this approach. It was found that by building-in one, and subsequently two, water-cooled copper nozzles, the formation of skulls could be prevented.

At the same time, a new difficulty arose. When the converter was tilted, tar gases entered the oxygen feed pipe after the oxygen was turned off and caused explosions in the pipeline when the oxygen was again turned on. Also, the three pipes for incoming and outgoing water and oxygen were a source of trouble. The water-cooled nozzle was therefore replaced by the copper pipe shown in Fig. 1, which was wound with asbestos tape impregnated with water-glass and magnesite powder. A steel pipe shields the nozzle externally. It is inserted at each lining operation and burns away flush with the brickwork. This arrangement has proved to be the simplest and cheapest solution. In order to prevent tar gases from passing into the feed pipe, during the subsequent tests, the oxygen flow was cut off when the converter was tilted, and an air blast at a pressure of 2.5 atm. was blown through from the main blast pipe. After this arrangement was installed in collaboration with the machine shop, no more explosions occurred. In each heat, reversing was performed manually, which is very troublesome. For this reason, at present, an automatic safety reversing valve is incorporated, as shown in Fig. 2.

The oxygen issues from a pipe pressurized at 19 atm. through a control valve (Fig. 2) (4) and the hose connection (9) into the converter. The control valve is adjusted to the required pressure of, for instance, 5 to 7 atm. and subsequently adjusted manually as desired. As a future development a remote control from the converter pulpit or a control depending on a characteristic value, as, for instance, the temperature of the gas fume is contemplated, if it should be found that varying the pressure during the blow is advantageous. During refining, oxygen blast is used alone. If, while the converter is tilted, the pressure behind the blast valve falls below 0.5 atm. then the oxygen control valve (4) is closed by the contact pressure

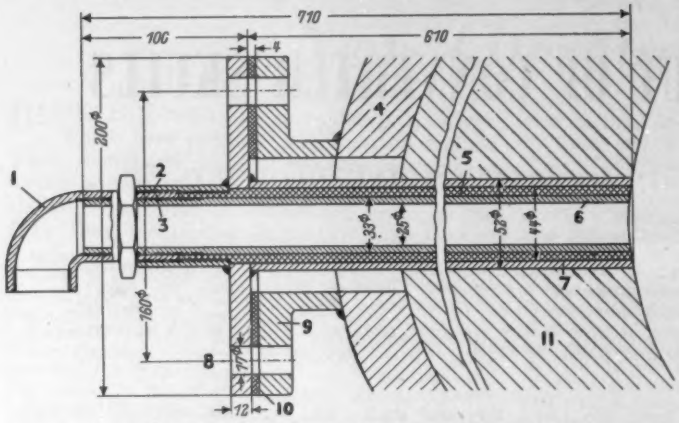


FIG. 1.—OXYGEN INLET TO CONVERTER NOSE.

1.—Turn radius ½ in. 2.—Sleeve 1½ in. 3.—Reducing bush 1½ in./1 in. 4.—Casing. 5.—Asbestos tape impregnated with magnesite and water-glass. 6.—Copper pipe. 7.—Steel pipe. 8.—Four holes on circumference. 9.—Welding flange 3 in. 10.—Klingerite gasket. 11.—Masonry.

gauge (6) and the magnetic valve (5) and the pipeline is blown with air. At the same time, the blast control valve (4) opens and the air blast issues from the main blast pipe, kept at a pressure below 2.5 atm. also through the feed pipe (9) into the converter, by which means, when the converter is tilted, the accumulation of a tar gas-oxygen mixture in the feed pipe, and consequent explosions, are prevented, while at the same time, by means of the oxygen relief valve (7), the air escapes through the air exhaust. If the pressure of the air blast again increases to above 0.5 atm. the magnetic valve (5) again opens the oxygen control valve (4) and the highly pressurized oxygen forces a passage through (9) while the air feed pipe is automatically closed down by the return valve. The armoured hose connection (9) has been in use for three months and is still intact.

Results

During the first converter campaign, blowing was performed with the arrangement described above built into a 40-ton unit with a full oxygen pressure of 19 atm. After blowing 130 heats, heavy erosion of the lining was observed on the opposite "belly," although a nose skull was not formed. Following this, in the subsequent runs, the oxygen pressure was held at 5 to 7 atm. and no further erosion of the lining was observed.

The volume of oxygen per minute was 180 cu. ft. to 186 cu. ft., or, with 12 min. blowing time, 2,230 cu. ft. With an average weight of steel of 35.5 metric tons, the consumption worked out at 63 cu. ft./ton steel. After the incorporation of the automatic reversing arrangement further tests were undertaken to reduce the oxygen consumption. Above all, it was necessary to establish whether the oxygen, or at least the main bulk of it, should preferably be blown in only during the decarburizing period, and particularly at the peak value of the carbon removal rate. In the converters at the Huckingen Steelworks, a change in the shape and taper of the nozzles is not at present contemplated. It might be advisable, however, in converters of other shapes, to try a radial or tangential nozzle-setting. Probably further improvements could be obtained by constructing the copper pipe as a swirl tube.

With an oxygen pressure of 5 to 7 atm. a single skull remains at the converter hood which can be easily removed without percussion which is not favoured by the engineering department. In the converter equipped with this device, the nose had to be scoured nine times during the campaign. Four bottom changes were necessary. The total time involved was 64 min. or 4.9 min. per clean-up, including cleaning the nose while changing the bottom.

In a comparable converter with the usual cleaning methods, the durations were 15 times longer for cleaning the nose and four times longer for changing the bottom. Total time, 395 min., or 20.7 min. per clean-up. The device is installed in all four converters with automatic control.

Summary

The removal of nose skulls in bottom-blown basic-Bessemer converters is time-wasting and is difficult in large converters. Tests have been made to prevent the formation of skulls or to melt

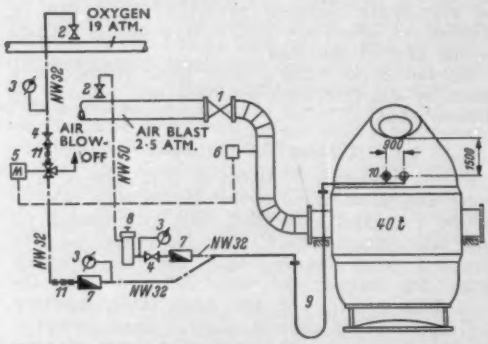


FIG. 2.—SWITCHING DIAGRAM FOR THE AUTOMATIC BLOWING OF OXYGEN INTO THE CONVERTER NOSE.

1.—Blast valve. 2.—Stop valve. 3.—Pressure gauge. 4.—Control valves. 5.—Magnetic valve. 6.—Transmitter for magnetic valve. 7.—Retaining valves. 8.—Filter. 9.—Hose connection. 10.—O_2-nozzles NW 25. 11.—Copper baffles.

them down again by introducing oxygen through water-cooled lances into the converter nose. When the converter was tilted, tar gases appeared in the shut-off oxygen feed pipe and caused explosions in the pipe.

A switching arrangement has been developed and is described, for the automatic injection of oxygen into the converter hood whereby after shutting off the oxygen feed, an air blast at a pressure of 2.5 atm. is blown through from the blast main.

This arrangement has been developed in collaboration with the machine shops and further explosions have been prevented.

FORTHCOMING EVENTS

DECEMBER 30

Junior Institution of Engineers:—Meeting at Pepys House, 14, Rochester Row, Westminster, London, S.W.1, at 7 p.m. Film evening.

JANUARY 3

South Staffordshire and Warwickshire Institute of Mining Engineers:—Meeting at the Swan Hotel, Lichfield, Talk and two films ("Glass" and "Glass Making"), by Pilkington Bros., Limited.

Institution of Electrical Engineers (North Midland Centre):—Meeting at the Leeds and County Conservative Club, South Parade, Leeds 1, at 6.30 p.m. "Water-turbine-driven Induction Motors," by C. L. C. Allan.

JANUARY 4

Society of Chemical Industry (Corrosion Group):—Cathodic protection panel meeting at 14, Belgrave Square, London, S.W.1, at 6 p.m. Discussion on galvanic anodes.

Junior Institution of Engineers (Midland Section):—Meeting at the James Watt Memorial Institute, Great Charles Street, Birmingham, at 7 p.m. "Engineering in Chemical Works," by E. R. Brazier.

JANUARY 5

Midland Institute of Mining Engineers:—Meeting at the Royal Victoria Hotel, Sheffield. "Subsidence Observations over Shallow Workings, including Pneumatic Stowing and Rapid Advancing Faces," by W. J. Aynsley and G. Hewitt.

Institution of Mechanical Engineers (Industrial Administration and Engineering Production Group):—Meeting at 1, Birdcage Walk, Westminster, London, S.W.1, at 6 p.m. Discussion on "The Reliability of Mechanical Engineering Parts of Data Processing Equipment."

Institution of Mechanical Engineers (East Midlands Branch):—Meeting at the College of Technology and Commerce, Leicester, at 7.15 p.m. "The Vibration of Vertical Milling Machines under Test and Working Conditions," by Prof. S. A. Tobias.

JANUARY 6

Junior Institution of Engineers:—Meeting at Pepys House, 14, Rochester Row, Westminster, London, S.W.1, at 7 p.m. Films by Shell-Mex & B.P., Limited.

National Association of Colliery Managers

JANUARY 2

South Midland Branch:—Meeting at Ashby Rescue Station at 4 p.m. "Management Use of Method Study," by T. A. C. Williams.

JANUARY 10

Yorkshire Branch:—Meeting at the Miners' Welfare Hall, Brodsworth, at 3 p.m. "Whitwood Colliery Reconstruction," by J. Hilton.

South Wales Branch:—Meeting at the Castle Hotel, Neath, at 6 p.m. "Some Problems of Mechanization in the South-Western Division," by G. V. Standerline.

JANUARY 16

Midland Branch:—Meeting at 6.30 p.m. Address by J. Crawford, industrial relations member, NCB.

JANUARY 18

North of England Branch:—Meeting at 6.45 p.m.

Seasonal Greetings

IN conveying our thanks for the calendars and diaries mentioned below, we take the opportunity of expressing our best wishes for Christmas and prosperity in the New Year to the senders.

DENVER EQUIPMENT COMPANY, LIMITED, London, E.C.2—Wall calendar giving the full 12 months.

LEVERTON OF LEEDS, LIMITED, Leeds and Rotherham—Some fine colour photographs illustrate this very attractive monthly wall calendar.

STEWARTS AND LLOYDS, LIMITED, London, W.1—The company's neat and attractive monthly desk calendar has made a welcome reappearance.

BROOK MOTORS, LIMITED, Huddersfield—A handy monthly desk calendar with illustrations depicting progress in the manufacture of motor cars and electric motors.

UNITED ENGINEERING & FOUNDRY COMPANY, Pittsburgh, Pa—Large wall calendar giving three months on each sheet and carrying illustrations of the company's plant.

PRIEST FURNACES, LIMITED, Middlesbrough—Photographs of steelworks' equipment alternate with attractive views of various parts of the United Kingdom illustrations on a large monthly tear-off wall calendar.

JOHN LAING & SON, LIMITED, London, N.W.7—Magnificent reproductions in colour (printed by Harrison & Sons, Limited) of works of art illustrate this large and elegant wall calendar, which gives the dates for four months on each sheet.

HUGH WOOD & COMPANY, LIMITED, Gateshead-on-Tyne—Fifty years of progress is the theme of the illustrations on a large monthly tear-off wall calendar. Views of some of the company's workshops and of a selection of the products manufactured are included.

MAVOR & COULSON, LIMITED, Glasgow—The usual features of a pocket diary are supplemented by several pages of special interest to those associated with the mining industry—details of the company's underground machinery, conversion tables, and other very useful information. Also, an attractive wall calendar.

BRITISH OXYGEN COMPANY, LIMITED, London, S.W.1—An attractive desk diary reminds us that next year marks the completion by the company of "75 years in the service of industry and medicine." Interesting colour photographs have been used to illustrate the diary, which also gives an outline of the company's services.

MINING ENGINEERING COMPANY, LIMITED, Worcester—In addition to providing the usual space for diary entries, the company's desk diary gives the dates for three months on every page and at the back there are alphabetically tabbed memoranda pages. A pocket diary contains all the features one looks for, while the "Meco" monthly tear-off wall calendar carries a full colour reproduction of the Golden Valley, Worcestershire, from an original transparency by R. Coleman.

Swedish Iron-ore Exports

According to the Stockholm business weekly Affärsvärlden, Sweden's iron-ore exports are likely to reach a new peak of 19,500,000 tons this year, which would be about 10 per cent. higher than the previous peak, of 17,700,000 tons, reached in 1957, and about 4,000,000 tons more than the actual shipments in 1959.

Pig-iron and Steel Production

IN the following United Kingdom pig-iron and steel statistics, issued jointly by the Iron and Steel Board and the British Iron and Steel Federation, Table 1 gives the production of pig-iron and ferro-alloys and the number of furnaces in blast in October. Table 2 gives the production of steel ingots and castings in October and Table 3 gives details of finished steel in September last. Activities of the industry are summarized in Table 4.

TABLE 1.—*Weekly Average Production of Pig-iron and Ferro-alloys in October*, 1960 (*Thousands of Tons*).

District.	Fur. naces in blast.	Hema-tite.	Basic.	Foun-dry.	Forge.	Ferro-alloys.	Total.
Derbys., Leics., Notts., Northants, and Essex	20	—	30.5	20.2	0.1	—	50.8
Lancs (excl. N.-W. Coast), Denbighs., Flints, and Ches.	7	—	24.6	—	—	1.9	26.5
Yorkshire (excl. N.-E. Coast and Sheffield)	—	—	—	—	—	—	—
Lincolnshire	10	—	45.1	—	—	—	45.1
North-East Coast	18	2.3	67.3	—	—	1.3	70.9
Scotland	7	1.6	23.6	1.1	—	—	26.3
Staffs., Shrops., Worcs., and Warwicks	5	—	10.9	1.0	—	—	11.9
S. Wales and Monmouthshire	10	2.3	53.6	1.3	—	—	57.2
Sheffield	2	—	3.4	—	—	—	3.4
North-West Coast	8	19.1	—	1.6	—	1.1	21.8
Total	87	25.3	259.0	25.2	0.1	4.3	313.9
September, 1960	87	21.5	256.4	23.2	0.1	4.6	305.8
October, 1959	76	22.0	220.0	23.9	1.1	2.8	269.8

TABLE 3.—*Weekly Average Deliveries of New Non-alloy and Alloy Finished Steel.* (*Thousands of Tons.*)

Product.	1958.	1959.	1959.	1960.	
			Sept.*	August.*	Sept.
Non-alloy steel:					
Ingots, blooms, billets, and slabs‡	4.6	5.1	5.7	4.2	6.6
Heavy rails	10.2	6.8	6.8	8.2	8.6
Sleepers	1.2	0.6	0.5	0.6	2.0
Fishplates and soleplates	0.7	0.4	0.4	0.5	0.7
Plates, 3 mm. thick and over:					
(i) Over ⅛ in. thick	29.6	24.8	26.6	27.6	33.7
(ii) Under ⅛ in.	17.7	18.3	19.0	20.6	23.2
Other heavy prods.	41.8	41.2	48.0	42.0	56.1
Ferro-concrete bars	7.6	9.6	12.9	9.0	14.3
Wire rods	21.5	23.5	24.7	23.5	29.8
Arches, etc.	8.6	7.8	7.8	6.6	8.3
Other light sections	29.1	33.0	36.9	31.6	43.7
Bright steel bars	6.2	7.6	8.3	7.6	10.6
Hot-rolled strip	22.6	27.4	30.1	23.6	36.3
Cold-rolled strip	7.0	8.0	9.2	7.6	11.6
Sheets, incldg. coated:					
(i) Hot rolled	10.6	11.8	14.1	12.0	12.6
(ii) Cold reduced	31.1	35.2	37.5	40.1	41.9
Tinplate:					
(i) Hot dipped	8.4	7.7	8.8	6.3	8.4
(ii) Electrolytic	10.3	13.2	14.9	11.1	15.4
Blackplate	0.8	0.7	0.9	0.7	1.1
Tubes up to 16 in.	19.0	20.6	22.5	17.5	27.7
Tube fittings, etc.	0.4	0.4	0.4	0.3	0.5
Tyres, wheels, and axles	4.5	2.4	1.8	2.2	2.2
Forgings (excl. drop)	2.6	2.1	2.0	1.8	2.5
Steel castings	4.2	3.6	3.7	3.7	4.6
Tool steel	0.2	0.2	0.2	0.2	0.3
Total	300.5	312.0	343.7	308.9	402.7
Alloy steel	16.1	18.2	18.5	17.1	25.0
Total deliveries from UK prod.†	316.6	330.2	362.2	326.0	427.7
Add: Imported finished steel	7.0	7.1	6.1	24.2	21.6
	323.6	337.3	368.3	350.2	449.3
Deduct: Intra-industry conversion§	41.2	47.6	51.7	41.0	59.6
Total new material	282.4	289.7	316.6	309.2	389.7

† Includes finished steel made from imported ingots and semis.
‡ Other than for conversion into any other form of steel listed.
§ Material for conversion into other products also listed in this table.

TABLE 2.—*Weekly Average Production of Steel Ingots and Castings in October*, 1960. (*Thousands of Tons.*)

District.	Open-hearth.		Bessemer.	Electric.	All other.	Total.		Total ingots and castings.
	Acid.	Basic.				Ingots.	Castings.	
Derbys., Leics., Notts., Northants, and Essex	—	4.9	16.0 (basic)	2.6	0.1	22.0	1.6	23.6
Lancs. (excl. N.-W. Coast), Denbighs., Flints., and Ches.	1.5	40.1	—	5.7	0.3	46.2	1.4	46.2
Yorkshire (excl. N.-E. Coast and Sheffield)								1.4
Lincolnshire	—	52.1	—	—	0.1	52.0	0.2	52.2
North-East Coast	0.7	96.7	—	1.8	0.4	97.5	2.1	99.6
Scotland	0.5	49.6	—	3.0	—	50.9	2.2	53.1
Staffs., Shrops., Worcs., and Warwicks	—	27.8	—	4.6	0.8	31.2	2.0	33.2
South Wales and Monmouthshire	1.9	95.0	17.1 (basic)	0.9	0.2	114.6	0.5	115.1
Sheffield (incl. small tonnage in Manchester)	9.0	41.0	—	15.2	0.4	63.5	2.1	65.6
North-West Coast	0.1	—	6.0 (acid)	0.9	—	6.8	0.2	7.0
Total	13.7	407.2	39.1	34.7	2.3	484.7	12.3	497.0
September, 1960	12.6	394.8	37.1	34.2	2.3	469.0	12.0	481.0
October, 1959	14.3	362.3	30.7	32.0	2.1	430.7	10.7	441.4

TABLE 4.—*Iron and Steel Index and General Summary of Pig-iron and Steel Production.* (*Weekly Average in Thousands of Tons.*)

Period.	B.o.T. Price Index, 1938 = 100			Iron-ore output.	Imported ore used.	Coke sent to blast furnaces.	Pig-iron, ferro-alloys prod.	Scrap used in steel prod.	Steel (incl. alloy).			
	Iron and steel.	Coal.	Basic materials§						Imports.†	Prod. ingots, castings.	Delivrs. finished steel.	Stocks.‡
1958	343	503	478	276	262	227	245	196	9	369	284	2,242
1959	340	497	477	286	244	210	242	208	7	388	291	2,244
1960—July	339	483	482	302	305	261	289	194	41	391	317	2,428
Aug.*	339	483	476	321	296	255	291	214	32	423	310	2,619
Sept.	339	520	473	336	317	265	306	252	25	481	391	2,644
Oct.	339	520	472	344	332	273	314	256	17	497	386	2,621

* Months contain five weeks, all tables
† Weekly average of calendar month.
‡ Stocks, ingots, semi-finished and finished steel, at the end of the years and months shown.
§ Used in non-food manufacturing industries.

THE DRIVE TO IMPROVE PRODUCTIVITY

Developments in

BRITISH MINING TECHNIQUES

By H. E. COLLINS,
C.B.E., M.Eng., M.I.Min.E., A.M.I.E.E.

Recent developments in the British coal-mining industry are surveyed by the board member for production and reconstruction, National Coal Board, in an illustrated article in the September 10, 1960, issue of Gluckauf. Extracts from the article are here given.

HIGHER efficiency, with increased safety, is always the aim of mining engineers, and improved productivity is even more essential under the economic conditions prevailing in Europe. Coal must be made more competitive with alternative fuels which are encroaching at a disconcerting rate in the fields of primary energy supply.

In Great Britain, productivity is now higher than at any time in the history of British coal mining. In 1959 face productivity averaged 3.78 metric tons per manshift and for all employed 1.35 metric tons. These figures compare with 2.91 and 1.09 metric tons, respectively, in 1947.

Prospecting

During the past 12 years a lot of work has been done in proving the extension of reserves in areas adjacent to existing coalfields and also in the undersea deposits around the coast of Britain. Prospecting has been principally by deep-boring, but supplemented by various geophysical methods. Over 400 holes exceeding 300 metres in depth and about 5,000 holes of less than this depth have been drilled.

Since 1947, 4,000,000,000 tons of additional coal reserves have been proved, and new mines are under construction to work them. The total proved reserves of coal in Great Britain are sufficient to ensure adequate supplies for several hundred years.

In executing the boring programme every effort is made to obtain all possible information regarding the geological structure and the nature and disposition of the coal seams. The Schlumberger technique is applied to all important boreholes. By this process certain physical properties, such as electrical resistivity, radioactivity, and thermal conductivity, can be measured. From the results, recorded continuously as graphs, the nature and thickness of the coal seams and of individual rock layers can be determined. Any deviation of the holes from the vertical is recorded, and the inclination of the strata is registered. Specimen samples are taken, where necessary, from the walls of the boreholes. In water-bearing strata the flow of water likely to be encountered in shaft sinking can be estimated, which will determine the extent to which special processes, such as freezing or cementation, might be necessary.

Perhaps the most outstanding and interesting development by the National Coal Board in the field of prospecting is the use of a specially constructed boring tower for use at sea to prove the undersea reserves. Such reserves occur principally off the coasts of east Scotland, Northumberland, Durham, Cumberland, and South Wales. These reserves have been partially worked and mining continues from many collieries near the respective coasts. In places, workings already extend under the sea for as much as 6 km. Exploration beyond these workings had previously been confined to roadways driven within the seams, supplemented by borings upwards and downwards from them. More generally, the structure of the undersea coal measures had to be deduced from known geological trends.

Many of the coastal collieries required reconstruction and modernization, and, furthermore, new collieries were necessary fully to exploit the undersea reserves. The adoption of the horizon system of mining and the heavy capital cost in-

volved in the development programme made it imperative that a more complete appraisal of the disposition of the coal seams and the geological structure be provided. Thus, some five years ago, consideration was given to the possibility of drilling exploratory boreholes beyond the existing workings from a boring tower which could be floated out to sea and grounded on the sea bed at predetermined sites.

Accordingly, a boring tower was designed for this work which could withstand the force of gales of up to 130 km. per hour and operate in any depth of water up to 36 metres when built up to its full height. Valuable geological information has already been obtained.

Recently, proving the undersea coalfields by offshore boring has been supplemented by marine seismic geophysical surveying, a system intermediate between sonic echo-sounding and true seismic reflection methods. The source of energy is the discharge of 12,000 volts across a small spark gap at the end of a cable towed astern from one side of a small motor vessel. A cable on the other side of the ship carries a hydrophone which detects the energy thrown back from reflecting surfaces—the sea bed, rock head, and interfaces between rock layers of contrasting elastic properties.

Surveys have already been made of the undersea coalfields off the coasts of Northumberland, Durham, and Fifeshire. The results obtained conform remarkably well with the information given by offshore boring. It is expected that marine seismic geophysical surveying will prove of great value in completing the details of the undersea coalfield structure.

Shaft Sinking

In the period 1947 to 1959, 41 new shafts had been sunk to depths varying from 150 to 1,000 metres, with an average depth of 600 metres. At present 15 shafts with an average depth of 750 metres are in the process of sinking. At the commencement of the reconstruction programme, shaft sinking was at the rate of 25 to 30 metres per month. Latterly, much higher speeds have been achieved, ranging from 50 to 100 metres per month.

The speed of shaft sinking is governed by three major factors—loading of stone at the shaft bottom, stone-winding capacity, and the method of lining the shaft. The more efficient loading of stone in the shaft bottom has been achieved by the introduction of mechanical loading, using either the cactus grab or some form of mechanical shovel. A survey of a number of sinkings, made in 1957, showed that the loading of stone occupied over 50 per cent. of the time required for all operations in shaft sinking. It was shown that under comparable conditions mechanical loading was over twice as fast as hand loading.

To obtain full advantage from increased rates of loading it was essential to have adequate winding capacity. One single-drum winder is only adequate with mechanical loading down to a depth of about 120 metres. Double-drum winders are adequate down to a depth of about 500 metres. Sinkings at present in progress have an average depth above this latter figure and all new sinkings have two single-drum winders, but improvements have been made which reduce the time taken to clear the hoppits at the surface, and, furthermore, the size of hoppits has been increased and higher winding speeds achieved. At shafts now being planned the permanent winders will normally be installed before sinking commences and will be used during the sinking operations.

The survey referred to revealed that the time taken for shaft lining was about 30 per cent. of the total time of sinking. Traditionally, British practice had been that shaft lining proceeded separately from other operations and usually all other work was suspended while the permanent lining was in progress. In other countries there were numerous examples where lining proceeded simultaneously with the other sinking operations. Strata conditions and safety regulations in Great Britain require the use of temporary lining, which militated against the adoption of the simultaneous principle. However, the introduction of strata bolting has completely modified the method of temporary lining. This has allowed reorganization of work in the shaft and in some cases a limited application of simultaneous shaft sinking and lining. The techniques so developed have already resulted in greatly increased sinking speeds. In such cases the temporary lining consists of mild-steel plates or bars and steel wire mesh secured to the shaft sides by strata bolts. This temporary lining then forms part of the reinforcement of the permanent concrete lining.

An outstanding development in shaft lining has been the use of concrete applied to shafts sunk by the freezing process. Improvements in shaft sinking techniques generally have made it possible to achieve much improved rates of shaft sinking—in some cases in the order of 100 metres per month.

Tunnelling

It is only in the last 10 years that tunnelling has been a really important aspect in the development of British coal mines. In this period there has been a marked change from the traditional method of mining where the main roadways virtually followed the contour of the coal seams. Horizon and semi-horizon methods are now adopted which involve considerable drivages, on almost level conditions, in the strata associated with the coal seams. It is not surprising, therefore, that in the techniques of tunnel drivage we had much to learn from civil engineering contractors engaged in tunnelling the hydro-electric projects and from the continental coalfields. Comparative studies of efficiency in the operation of tunnelling in British mines, a number of hydro-electric tunnels, and of tunnelling in coalfields abroad made it possible to establish standards for this work in Great Britain.

Moreover, considerable research was devoted to all aspects of drilling and blasting. In addition, the technique of work study was applied to various tunnels in progress in order to establish the best possible organization of tunnelling operations.

Some idea of the improvement achieved is demonstrated by the fact that in 1953 only at seven tunnels did the rate of drivage exceed 18 metres per week, whereas in 1958, 22 tunnels exceeded a rate of 18 metres per week and six exceeded 27 metres per week. Recently speeds of up to 90 metres per week have been achieved.

The equipment used in British tunnels is very similar to that operating in continental coalfields. Percussive drilling, using airleg-mounted machines, predominates, although drilling rigs are also used. Percussive-rotary drills are also gaining favour, for they have the advantage of high rates of penetration at comparatively low thrusts, which facilitates their use with fully automatic drill booms.

Mechanical loading is widely practised and the machines in use fall principally into three groups—shovel loaders, gathering-arm loaders, and slusher loaders. There are also a number of shaker loaders in use, and recently the rake, or drag, loader has been introduced in British mines.

Coal-face Operations

Since 1947 there has been a remarkable development in power-loading, and at the present time 33 per cent. of the total output is produced by this means. The successful application of many of the power-loading units now operating in British mines has been made possible by the use of the armoured flexible conveyor, a development from continental practice.

Perhaps the most striking development in support of the roof at the face has been the introduction of self-advancing hydraulic roof supports. A recent survey of all forms of face support systems shows that despite the high capital cost of the self-advancing hydraulic roof supports, their operating costs, including capital charges, are the lowest.

It has been the practice in British coal mining for many years to utilize the caving system wherever possible, but coal production from this system only amounts to 27 per cent. of the total production. Partial or strip packing is applied on faces representing 69 per cent. of total production. In recent years there has been an extension of solid stowing, although its use is confined to 4 per cent. of total production.

Approximately 14,000,000 kg. of explosives are used annually in British mines to break down the coal at the working faces and nearly 9,000,000 kg. are used in stone work. Simultaneous firing is practised in both coal and stone and for stone drivage the use of delay-action detonators predominates. An interesting development over the past few years has been the introduction of pulse-infusion firing. Originally single shotfiring was used with the pulsed-infusion method, but recently simultaneous and delay firing of rounds of shots has been successfully adopted.

High-pressure compressed air has been used for many years for breaking down coal, particularly in the United States of America. The application of this system in British mines commenced in 1955. At present two systems are employed, using the Armstrong Airbreaker and the Airdox plant.

Hydraulic Mining Transport

Success with hydraulic transport of coal in some coal-producing countries and the somewhat more limited application of hydraulic pressure for the winning of coal resulted in consideration of the systems by the National Coal Board.

Two installations for hydraulic transport are now operating, and experiments with hydraulic mining are proceeding at a drift mine in South Wales. The seam being worked at this colliery is of coking quality and is normally crushed to minus 2 in. The coal is hard, but reasonably well-cleated, and is at a depth of 80 metres; the seam has a gradient of about 1 in 15. A system of room-and-pillar working has been adopted and is generally being developed by the use of the Joy continuous miner. However, an attempt is being made to drive the headings in coal by means of water pressure. The principal application of hydraulic mining will be in the subsequent extraction of the pillars of coal on a retreating system.

Pumps on the surface deliver water at 85 atmospheres, along a pipeline, approximately 800 metres long to monitors at the coal face. Two monitors are being tried, one hand-operated unit and the other a power-operated unit with remote control.

Transport of coal from the face is by gravity through open flumes to an underground collecting sump. Here the coal is screened and the sizes greater than 2 mm. pass to the present belt-conveying system. Coal below 2 mm. is conveyed hydraulically through a pipeline to the surface. Ultimately it might be possible to crush all the oversize coal and have a complete hydraulic transport system. The coal is dewatered at the surface in a battery of medium-pressure cyclones, and the clarified water is returned to the circuit. Normal mine drainage water is used for make-up purposes.

It is not expected that hydraulic mining and transport will have any wide application in Great Britain. The strata normally associated with the coal seams are adversely affected by the presence of water, and roof control might prove difficult. At the colliery where experiments are now proceeding the underground workings are naturally very wet, and this difficulty does not arise.

Transport

The principal line of development in main transport systems has been the considerable extension of locomotive haulage in British mines. This has followed, principally, from the wide adoption of the horizon system of mine development. In 1947, only 80 locomotives were operating, while at the present time there are over 1,000 in use. Even

with this expansion this form of underground transport represents a small proportion of all transport systems. Rope haulage and trunk conveying still predominate. Diesel types represent 75 per cent. of the total number of locomotives in use, and with the exception of two electric trolley installations, the remainder are of the electric battery type.

One of the electric trolley locomotive schemes is of exceptional interest. The installation at Silverwood Colliery, in Yorkshire, consists of seven 25-ton, 380-h.p. locomotives operating on 1-metre gauge track. The supply to the locomotives is by means of overhead wire at 250 volts d.c., with the return circuit through the welded track rails. The total length of road is 5,000 metres, with the gradient dipping inbye. The most severe incline is one of 1 in 28.5 for nearly 300 metres, while a total of 3,000 metres is over 1 in 45 or steeper. The trains are normally hauled up by two locomotives in tandem operated by one driver, and consist of 18 5-ton coal capacity mine cars, a total load behind the drawbar of 135 tons. The operating speeds against the gradients vary from 10 to 15 km. per hour, while the empty train going down the gradient is limited to 24 km. per hour.

A completely new development in locomotive traction is that of the electro-gyro locomotive, although this has, up to the present time, been used only on a colliery surface. This type of locomotive operates on energy stored in a revolving flywheel which allows 20 to 30 min. running with each charge of energy. The flywheel may be regarded as replacing the electric storage battery. Originally it was thought that the electro-gyro locomotive might prove suitable for underground transport if the cycle of operations, charging and discharging, could be made to correspond with the required duty. However, after prolonged tests on the surface it seems that the mechanical reliability of this locomotive is insufficient to warrant further development.

About 95 per cent. of the total output in Great Britain is transported at the face by some form of conveyor. Out of a total of over 10,000 units some 6,500 face conveyors are of the belt type, over 2,000 are of the scraper chain type, about 1,000 are flexible armoured conveyors, and the remainder are of the shaker and miscellaneous types. In roadway transport of the coal approximately 33 per cent. of the output is conveyed to the shaft botton on trunk conveyors, mostly of the troughed-belt type, although a few cable belts and steel plate conveyors are in use.

Between 80 per cent. and 90 per cent. of all conveyor belting now in use in British mines is of the fire-resistant type. Only in exceptional circumstances and where fire is not regarded as a possible hazard may rubber belting be installed.

In conveyor design perhaps the most notable achievement has been the development of the cable belt.

National Coal Board Specifications

SPECIFICATIONS recently issued by the National Coal Board include those mentioned below. The charge for each specification is 6d. They are available from the NCB.

No. 197 covers high alumina cement manufactured by fusing aluminous and calcareous materials to a complete molten state and grinding the resulting clinker so as to produce a cement capable of complying with BS 915. No materials other than water shall be added after fusing.

No. 198 relates to naturally occurring sands, crushed stone sands, and crushed gravel sands used for mortars for brickwork, both plain and reinforced, for building with clay or concrete blocks, and for masonry.

No. 199 gives requirements for naturally occurring sands, crushed stone sands and crushed gravel sands used for external renderings; internal plasterings using mixes of lime and sand, with or without the addition of cement or gypsum plaster; cement and sand, with or without the addition of lime; and for floor screeds of cement and sand.

No. 200 refers to naturally occurring sands, crushed stone sands, and crushed gravel sands used for internal plastering with gypsum plaster, with or without the addition of lime.

No. 204 gives requirements for the composition, manufacture, sampling and testing of Portland blast-furnace cement containing not more than 65 per cent. of blast-furnace slag.

STUDY OF SCOTTISH MINERS' CONDITIONS

STUDY of wages and conditions of work of coal miners in the west of Scotland in the past is being made by members of the Department of Economic History in the University of Glasgow. Prof. S. G. Checkland, of the department, is seeking, on behalf of the study group, to make contact with any former employees of William Dixon, Limited, ironmasters and colliery owners, formerly of 1, Dixon Street, Glasgow, especially those having had connections with the collieries operated by the company—Blantyre, Wilsontown, Auchlochan, and Polkemmet.

Prof. Checkland states that it is felt that the interpretation of the surviving records would be greatly aided if former colliers or colliery managers could give the study group their recollections of conditions, especially in the early part of the present century.

IWS Supervisor's Handbook and Diary

First published in 1960, the Industrial Welfare Society's Supervisor's Handbook and Diary makes a welcome reappearance with a 1961 edition. Apart from a diary section, there are articles on many aspects of a supervisor's job and a wealth of other information—"a pocket-sized, stain-resistant reference book and a diary all in one." Copies, 5s. each, may be obtained from the society at Robert Hyde House, 48, Bryanston Square, London, W.1.

FRENCH STEEL INDUSTRY

Increased Capital Expenditure

FRENCH steel production continues to increase, but France's former position as the world's fifth largest producer has now been taken by Japan, says the anual report of the Chambre Syndicale de la Sidérurgie Française. Capital expenditure in the French steel industry of over 100,000 million " old " francs last year was 7 per cent. higher than in 1958 and 20 per cent. higher than in 1957.

According to a summary of the report made by the Intelligence Department of the British Iron and Steel Federation, steel production in France increased by 4.1 per cent. last year to 15,219,000 metric tons, basic-Bessemer output rising to 9,262,000 tons, open-hearth to 4,555,000 tons, and electric to 1,291,000 tons. While output of ordinary steels rose by 5.5 per cent. in 1959, production of special steels fell by nearly 10 per cent. to 1,156,000 tons. Pig-iron production rose by 4.2 per cent. to 12,472,000 tons, and rolled products output by 4.7 per cent. to 11,179,000 tons. Output of heavy steel products was down, but production of reinforcing rods increased by 23 per cent. and wire rod by 15 per cent., while the proportion of flat products rose to 46.2 per cent. of the total.

Increased requirements of coal and coke were easily covered. Total blast-furnace coke consumption increased by 2.6 per cent. to 12,547,000 tons, but the coke rate was slightly reduced to 1,006 kg. per ton of pig-iron. French efforts to reduce the coke rate are still in the early stages: the proportion of sinter in the blast-furnace burden should rise from 11 per cent. in 1959 to 46 per cent. by 1963. Deliveries of coke from French mines and gasworks increased to 4,779,000 tons, while imports from other ECSC countries fell to 4,110,000 tons. The industry's own coking plants, whose output rose to 4,244,000 tons, reduced the proportion of foreign coal consumed from 68 to 60.7 per cent.

Oversea Ore Deposits

Iron-ore consumption increased last year by 5.1 per cent. to 36,505,000 tons, of which 35,622,000 tons from French mines; consumption in blast furnaces was 32,531,000 tons (2.1 per cent. up), in sinter plants 3,878,000 tons (39.2 per cent. up), and in steelworks 96,000 tons. Stocks were reduced during the year from 1,700,000 tons to 500,000 tons, so that production rose by only 2.4 per cent. to 60,920,000 tons, of which 57,235,000 tons from Lorraine. Iron-ore exports rose by 4.5 per cent. to 24,503,000 tons, equivalent to 40.2 per cent. of total production, since increased deliveries to Belgium and Luxembourg more than offset the drop in exports to Saar, UK, Germany, and Netherlands. The French steel industry is paying close attention to development of oversea ore deposits.

Scrap consumption declined by 70,000 tons last year to a total of 6,570,000 tons, of which 1,186,000 tons was used in blast furnaces, equivalent to 95 kg. per ton of pig-iron produced, and 5,384,000 tons in steelmaking, or 354 kg. per ton of steel. Of total requirements, 3,524,000 tons, or 53.6 per cent., was circulating scrap. An increase in scrap arisings last year enabled imports to be reduced to 308,000 tons (566,000 tons in 1958), while exports increased to 1,220,000 tons (558,000 tons).

Home steel demand began to improve in May, 1959, and for the year as a whole new orders for ordinary steel products were 19 per cent. higher than in 1958. Apparent steel consumption, however, declined to 11,900,000 tons (13,063,000 tons in 1958), largely as a result of de-stocking, but actual steel consumption showed little change. Deliveries of foundry pig-iron, special steels, merchant bars, structurals, and heavy plates were reduced last year, but there were increases in deliveries of wire rod and strip.

Steel exports reached a record level last year, the favourable demand being largely due to the US steel strike. The French industry exported last year 3,855,000 tons (2,916,000 tons in 1958), of which 406,000 tons (504,000 tons) to French oversea territories, 1,315,000 tons (775,000 tons) to other ECSC countries, and 2,134,000 tons (1,637,000 tons) to third countries. Exports to the US alone rose to 437,000 tons (110,000 tons). Iron and steel imports declined last year by 270,000 tons to 1,866,000 tons, which came almost entirely from other ECSC countries.

Home steel prices were increased by an average of 9 per cent in January, 1959, but, partly as a result of the devaluation of the franc, they were still over 15 per cent. lower than the prices of the other main ECSC producers. Later in the year, some of the other ECSC countries raised their prices, and by the year-end there was a difference of nearly 17 per cent. between French and German prices, and 24 per cent. between French and Belgian prices. In March this year the French prices were raised again by an average of 4.75 per cent., but French steel is still 10 per cent. cheaper than German and over 15 per cent. cheaper than Belgian.

On the capital expenditure side, investment aimed at increasing pig-iron capacity, which is the

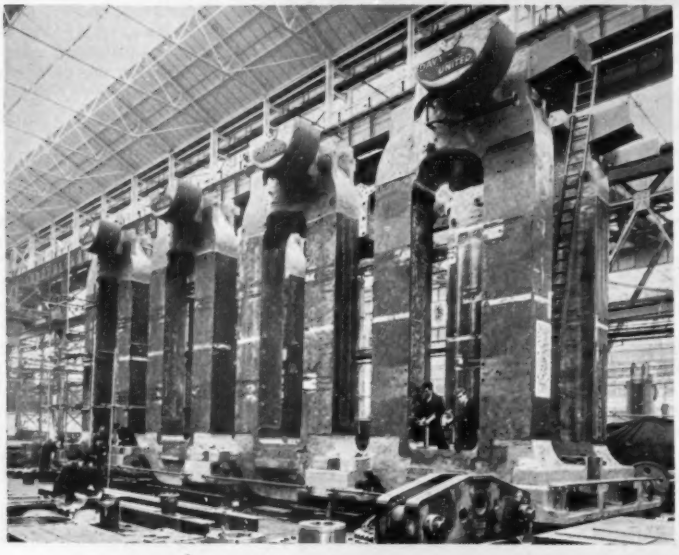
main bottleneck in the expansion of the French steel industry, is of particular importance. Six new blast furnaces were blown in last year, two with hearth diameters of over 7 metres, and 11 furnaces of similar size are to be built or reconstructed by 1962. Sinter production is being considerably increased to about 19,000,000 tons by 1963. Three beneficiation plants for Lorraine ore are planned: Lorraine-Escaut's magnetic separation plant at Metzange, starting up in the spring of 1961, will handle daily 1,500 tons (later 3,000 tons) of low-grade calcareous ore, while two others will handle siliceous ores. Investigations into the use of fuel-oil or natural gas in blast furnaces have shown that these techniques lead not only to reduced coke rate but to increased production.

Oxygen converter plants accounted for a large proportion of the expenditure on steelmaking in 1959: Sollac has just put into operation a 100-ton Kaldo converter; a large LD-OLP converter is under construction at Usinor's Denain works, and an LD-OLP plant at Dunkirk, while two further oxygen converter plants are planned in Lorraine. While expenditure on rolling mills is falling, as envisaged in the Third Plan, investment is still heavy for mills to roll beams with parallel flanges, for wide strip mills, for tinning and galvanizing lines, and for finishing equipment for special steels.

The steel industry's total capital expenditure in 1959 amounted to 126,000 million "old" francs, including 19,000 million francs for repayments on loans and 6,000 million francs for other investments (mainly in oversea ore mines), in addition to the 101,000 million francs on actual development. Taking account also of the increase in working capital required, the industry had to find a total of some 145,000 million francs. Despite an improvement in the financial results of companies, a large proportion of this total again had to be raised from the capital market. More funds came from capital increases (which provided 13,400 million francs) and debenture issues (which totalled 40,600,000 francs, including 31,100 million francs through the Groupement de l'Industrie Sidérurgique), but less money (only 10,300 million francs) was raised by loans from public funds.

France's third modernization plan (1957-61) envisaged a total expenditure on development of 375,000 million "old" francs, but already 279,000 million francs has been spent. Although financially the plan is proceeding more rapidly than expected, there is some delay in the raising of capacity towards the targets fixed in 1956. The Chambre Syndicale estimates that the "maximum possible production" at end-1961 will be equivalent to an annual rate of 17,800,000 to 18,000,000 ingot tons, while the plan's target of 18,500,000 will not be reached until some months later. The difference between the targets set and the figures which will probably be reached is estimated at about 1,200,000 tons for basic-Bessemer steel and 400,000 tons for open-hearth steel, but production of steel in oxygen converters (Kaldo, LD, etc.), which was not taken into account when the plan was drawn up, will certainly exceed 700,000 tons.

The fourth modernization plan (1962-65) is likely to set the steel industry the ambitious target of some 22,000,000 to 23,000,000 tons of crude steel by 1965.



New Cold Mills for Colvilles

EIGHT cast-steel roll housings, each weighing 121 tons, are seen here in the heavy erecting shops of the Darnall Works of the Davy & United Engineering Company, Limited, a member of the Davy-Ashmore group of companies.

These housings are for a new 68-in., four-high, four-stand tandem cold strip mill, which Davy-United is building, along with a single-stand temper mill, for the Gartcosh Works, near Glasgow, of Colvilles, Limited.

At Gartcosh, Colvilles is establishing cold-rolling plant based on these mills to process eventually the hot-rolled strip which will be produced on the new hot strip mill at Ravenscraig, which Davy-United is also building.

INTRODUCING THE SPIRAL VANE DISC

LARGE COAL from ANDERTON SHEARERS

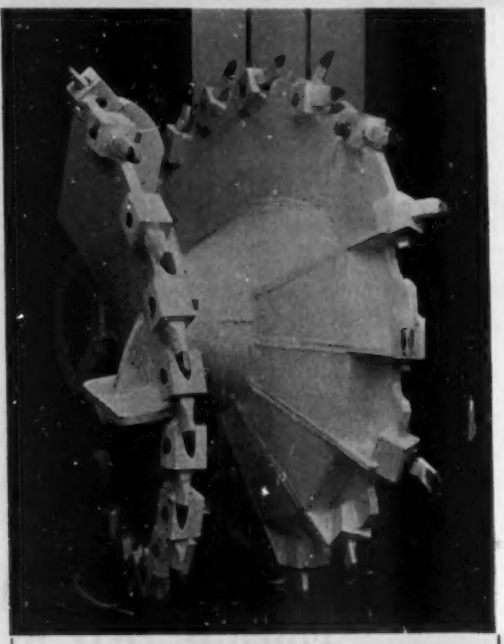


FIG. 1.—A 54-IN. SPIRAL VANE DISC FOR A WEB OR CUT OF 30 IN.

PRODUCTION of large coal and the need to intensify mechanized mining methods are two problems which are currently facing the mining industry. Many mining engineers thought that the problems of producing bulk output with minimum manpower had been overcome with the introduction of the Anderton shearer-loader. The machine proved to be versatile, being able to cope with the steep gradients and minor faults often found at coal faces in Great Britain.

Its main disadvantage, however, the production of small coal, became its undoing, and during 1957, when stocks of small coal began to rise rapidly, many Anderton shearers were removed from productive faces. Since 1957, efforts have been directed towards designing a disc which would limit the production of coal fines and increase the percentage of large coal in the product.

Recently, interest has been shown by the National Coal Board in the spiral vane disc (Fig. 1) manufactured by the Mining Supplies, Limited, Coxwold Works, Carr Grange, Doncaster. In the North-Eastern and North-Western Divisions, several of the newly designed discs are already in use.

Basically, the disc, which is intended as a direct replacement for the standard cylindrical drum of the Anderton shearer, consists of a shearing disc on to which is mounted a spiral vane. In the standard model, the spiral vane forms a complete helix, whose pitch is equal to the depth of cut being mined. The shearing disc is fitted with shearer-type picks forming a five-line lacing to provide clearance for the entrance of the shear disc body into the coal. Further picks are tangentially mounted on the periphery of the helical vane so that, as the disc rotates, the picks strike the coal at 1-in. centres.

The underlying theory behind the success of the spiral vane disc, which is illustrated diagrammatically in Fig. 2, is that the shearing section of the disc produces a pre-cut of a depth depending on the speed of rotation and the rate of travel of the

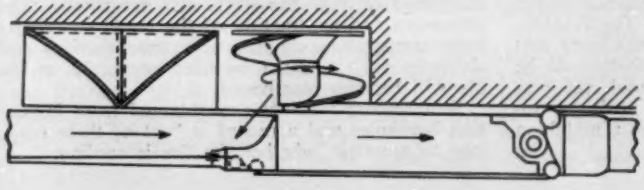


FIG. 2.—PRINCIPLE OF OPERATION OF THE SPIRAL VANE DISC.

machine along the face. Thus, the coal is relieved before the spiral vane begins to mine successive elements of coal along the width of the buttock.

With each vane having a pitch equal to the depth of coal being mined, the picks on the periphery of the vane can bring large lumps of coal into the spaces between the convolutions of the vane, and the rotating helical vane transports them to the face conveyor.

The vane rotates so that the cutter picks strike the coal from the roof to the floor, thereby loading a higher proportion of coal directly on to the conveyor and minimizing the amount of dust being scattered in the ventilating current of the coal face. A light-section plough is towed behind the shearer to load the remaining coal on to the conveyor. The loading action of the disc has been so successful in practice that it has been possible to cut in both directions with the disc revolving in the same direction, the picks then striking the coal from the floor to the roof. During this operation it is necessary to transfer the plough, which is reversible, to the opposite end of the machine.

The disc can be segmented to facilitate the passage of the machine along the face during a non-cutting return run of the shearer. The segmented section is received on the main section of the disc by T-shaped slots and secured in position by spring-loaded plungers.

Of welded construction, the disc is made from high-carbon steel to resist the stresses and strains set up in it during working. Discs ranging in diameter from 31 in. to 72 in. can be made, but in discs over 50 in. dia., the degree of stiffness is maintained by using thicker material for the helical vane and by welding further stiffening plates between the gussets securing the shearing and helical discs.

To facilitate handling and installation underground, the disc is divided along a radial line, the two halves being bolted together to form a complete unit when in operation.

To mine hard coal, a disc has been designed with two vanes similar to a two-start thread.

Pick boxes, also made from high-carbon steel, are welded into recesses at regular intervals around the periphery of the helical vane. Coal sizing tests taken with the helical vane, for which both oversea and British patents have been applied for, show that the +2-in. product is well in excess of the standard Anderton shearer.

FIRES IN COAL DEPOSITS IN THE US

EXTENSIVE areas of scoriaceous materials throughout the coalfields of western United States are evidence that outcrop fires consumed inestimable quantities of carbonaceous materials during prehistoric times. At one open-cast mine, mining operations disclosed that fire had consumed a strip of coal up to 100 ft. wide along the outcrop for a distance of about 4 miles. The fact that heat or fire was not encountered at any place where the working intersected the burned material is evidence that this fire had existed in prehistoric times and had been exhausted by natural causes.

The practical and administrative difficulties of dealing with these fires are described in Bulletin 590, issued by the Bureau of Mines, US Department of the Interior, 4800, Forbes Avenue, Pittsburgh, Pa. A fire-control programme has now been set up by the bureau. Prior to this, no scheme for sealing surface openings met with success.

In reviewing various methods that had been successfully or unsuccessfully used in the past, attention was given to the unsuccessful surface sealing method. The reason for failure in most cases appeared to be lack of maintenance of the surface seal over an extended period. The development of the surface sealing method was important because it offered a control method that could be employed on a great many fires and yet was within the economic capacity of local governments and individuals to participate on a matching fund basis.

Other methods, such as loading out, inundating, and trenching are more positive approaches, but in many situations they are either not applicable to a particular fire or their cost is prohibitive.

The features of transforming an unsuccessful method to an effective one at reasonable cost are methodical and complete coverage of the affected area. All openings in the vicinity suspected of admitting air are closed, and the surface is ploughed or imported material brought in to make an effective covering mantle. A long-term, inexpensive maintenance programme may be required.

The most important aspect in connection with surface sealing is emphasis on maintaining the seal after it has been installed. Crevices in the seal are expected owing to the conditions created as the fire area cools. After the seal is set heat loss from the fire is reduced because the convection currents exhausting through the overburden are blocked.

A temporary rise in the temperature of the fire area may occur. Then, if the smothering seal is effective, the fire will begin to cool as heat is conducted through the strata and dissipated. The expansion and contraction of the strata caused by these temperature changes will cause crevices and sinkholes. These must be filled promptly or the fire will become reactivated.

Temperature readings are obtained from inspection boreholes and a record is kept of these readings to ascertain whether the fire is cooling.

CHINA'S INDUSTRIAL PROGRESS

Evidence at Peking Exhibition

EVIDENCE of the remarkable advances achieved in the People's Republic of China during the past year—and even more in the two years which have passed since our correspondent last visited the annual National Industrial Exhibition—is contained in this year's exhibition, which opened recently in Peking. The most noteworthy progress has been in relation to the production of mining machinery and of heavy machinery for metallurgical and engineering plants.

China is now making steel rolling mills with an annual capacity of 3,200,000 tons, vertical lathes for workpieces 8 metres (26 ft. 3 in.) in diameter, etc., as well, of course, as the materials and components required for such equipment.

Compared with similar products exhibited last year and earlier, they are exemplary of modern technological progress in the direction of compression into smaller areas and volumes and of automation. This is due, not only to aspiration to be competitive, in these respects, with the more advanced industrial countries of the world, but also, surprisingly, because China, despite her enormous population, is actually short of labour, to cope with the vast number of major projects on which she is engaged!

Revealing Examples

The high speed at which these major projects are being executed is brought out by a table, published in the China Trade and Economic Newsletter, showing that a 1,513 cu. m. blast furnace was completed in four months and three days, a 500-ton open-hearth furnace in 23 days, a coke oven with 65 columns in 37 days, an aluminium plant with an annual capacity of 22,000 tons of ingot in 12 months, a copper ore-dressing plant handling 4,800 tons of ore daily in 18 months, and so on.

Our correspondent states that the exhibition provides convincing evidence that the high rate of advance made in 1958 and 1959 is being maintained, and that industrial targets for 1960 are well within reach.

Regarding steel, the crude steel produced during the months Janauary to August of this year, inclusive, amounted to 11,060,000 tons, which is about 70 times the figure for the whole of the year 1949. The 1960 target of 18,400,000 tons should unquestionably be achieved, probably with a margin to spare. This total will be made up, incidentally, by 1,400 iron and steel plants of various types and sizes, scattered all over China, so that there is now not a single Province or Autonomous Region in the Republic which is without one.

Despite the inhibiting effect of the Board of Trade's restrictions on China's exports to Britain and certain British technical goods to China, our trade with China for the first nine months of this year reached nearly £45,000,000, which is equal to that for the whole of 1959.

So far as steel is concerned, the bulk of exports in recent months have represented the working-off of orders placed at the end of 1959 and early in 1960, but there has also been some new business. One of the new contracts was with the English Steel Corporation, Limited, for the supply of 350 tons of die-steel bars. This is the latest in a series of contracts with the English Steel Corporation and other Sheffield firms over the last year for various high-grade steels, including railway material and stainless steel, and the impression is that this business is unlikely to stop, as there will be a demand for imported alloy and special steels for a long time to come, even if, as seems certain, Chinese production targets are reached.

West Germany also has been busy in the China market, and it is of interest that, although only £4,700,000 of her aggregate exports of £21,800,000, in that direction, during the first six months of this year, represented end-products, in the strict sense of the term, metalworking machinery was one of the three leading items among them. The bulk of the export total represented, as usual, iron and steel (£6,700,000) and copper wire rods (£3,500,000), while the raw material and pre-products category included unworked copper (£1,800,000), iron, aluminium, nickel, and other metals.

Canada's direct and indirect exports to China during the first six months of this year amounted to $15,000,000, as compared with $11,000,000 in the whole of 1959, and only $2,000,000 in the whole of 1958.

They included aluminium, nickel, zinc, steel, and magnesium. Possible new exports to China, according to the Canadian Trade Commissioner in Hongkong, are items which will contribute to China's industrial and agricultural development, such as copper, cables, nickel sulphate and nickel oxide, and mining and drilling equipment. It would seem, therefore, that there are very interesting possibilities there for the export of British-made machinery and equipment for the Chinese mining industry, which is expanding at a fantastic rate.

PLASTICS-COATED

Steel Pipe Carries Natural Gas

MORE than 22 miles of a special plastics-coated steel pipe has been installed to carry natural gas through highly corrosive coalfield soil and swampland in Kentucky. The new line was laid recently to serve the towns of Corbin and London. Despite the rugged terrain, the pipe, Republic Steel Corporation's X-Tru-Coat, was put in place at the rate of 6,600 ft. a day. The line was installed by the Cumberland Contracting Company, of Monticello, Ky.

The most corrosive agent along the route is the acid formed by rain and other moisture draining through piles of coal slag. The plastics coating will, it is hoped, keep the corrosive agents and the steel pipe permanently separated.

WORK IN PROGRESS IN LAYING THE PLASTICS-COATED STEEL PIPE FOR CARRYING NATURAL GAS.

The pipe, which was despatched from the steel mill with the ends of each length cut back sufficiently to allow welding, is 6⅝ in. dia. and will operate at 350 lb. per sq. in. pressure. The pipe coating, high-density polyethylene, is extruded over the steel pipe coated with a special adhesive.

SWEDISH STEEL INDUSTRY'S HIGHER FIGURES

INCREASED production and also exports and imports of all forms of iron and steel in the first half of this year over the corresponding period of 1959 was reported at a meeting of the Swedish Iron and Steel Works' Association. Production of pig-iron went up to 786,000 tons from 727,000 tons, and that of sponge iron to 72,000 tons from 51,000 tons.

Output of ingots was 1,628,000 tons, against 1,459,000, and total production of commercial steel products, including billets, was 100,000 tons higher at 1,069,000 tons.

Exports of iron ore were over a third larger, at 8,986,000 tons, against 6,615,000 tons in January-June, 1959.

Shipments of pig-iron were 20,000 tons, compared with 18,000 tons, and of sponge iron 14,000 tons, against 11,000 tons. Exports of commercial iron and steel showed a 22 per cent. rise at 244,000 tons.

Imports of pig-iron were more than doubled, at 104,000 tons, during the first half of 1960 against 47,000 tons last year, and those of scrap were 132,000 tons compared with 89,000 tons. Total imports of commercial steel products, including billets, jumped to 622,000 tons, against last year's 391,000 tons.

New Stainless Steel Electrode

A NEW electrode, "Super Stainees," for cutting the cost of welding stainless steels is being produced by the English Electric Company, Limited. It welds faster and more easily than conventional stainless steel electrodes by depositing up to 50 per cent. more metal. This is achieved by using a heavier electrode coating containing metallic powder. It thus has the advantages of iron powder electrodes. Longer runs can be obtained with a single electrode.

"Super Stainees" is used with the "touch" technique. The lighter gauges are suitable for use in all positions. There is hardly any spatter and slag is easily removed.

It can be used with a d.c. or a.c. output. The a.c. output should be over 70 volts open circuit and with d.c. electrode positive is preferable.

The new electrode has been developed and is marketed by the welding electrode division of the English Electric Company, Limited, Clayton-le-Moors, Accrington (Lancs).

Company News

STEWARTS AND LLOYDS

Rise of 4 Per Cent. In Total Dividend

INCREASE in group profits, before tax, from £11,077,000 for the 1958-59 53 weeks' period to £18,241,000 for the year to October 1, 1960, is reported by Stewarts and Lloyds, Limited, manufacturers of steel tubes, etc., of Glasgow, and the total dividend is being raised by 4 per cent. A final of 12 per cent. makes 15 per cent. on capital increased from £20,000,000 to £27,000,000 by a rights issue, compared with the forecast of at least maintenance of the previous year's 11 per cent.

The profit balance, after heavier tax charges, is up from £5,799,000 to £10,560,000, of which £442,000 (£351,000) is attributable to outside interests. Profits exclude those of the Staveley Iron & Chemical Company, Limited, which did not become a member of the Stewarts and Lloyds group until September 12, 1960. Staveley's net profit, after tax, was £542,200.

Sales to customers expanded from £118,500,000 to £139,400,000. Of the profits before tax, Stewarts and Lloyds contributed £10,479,000 (£5,728,000), home subsidiaries £4,359,000 (£2,517,000), and trade investments and oversea companies £3,403,000 (£2,832,000).

Large Pipeline Orders

The statement says that the steel and tube works were much more fully occupied than in the previous year. Increased exports to the oil industry resulted from certain large pipeline orders the group obtained. Since the end of the financial year, however, trading conditions had become more difficult. Capital expenditure, amounting to £7,101,000, continues on the development programme of the works in the UK, and plans are well advanced for a major scheme of capital development at Corby (Northants), which it will not be possible to finance from internal resources, the directors state.

Representative outputs for the Stewarts and Lloyds UK group, excluding Staveley, for the 1959-60 period (with the 1958-59 figures in parentheses) were:—Pig-iron, 1,922,000 (1,536,000) tons; steel ingots, 1,870,000 (1,414,000) tons; spun iron pipes and castings, 402,000 (324,000) tons; steel tubes, 1,008,000 (822,000) tons.

Tonnages of steel tubes despatched were:—Home (excluding oil), 533,000 (450,000) tons; oil industry, home, 20,000 (24,000) tons; export, excluding oil, 248,000 (232,000) tons; oil industry, export, 205,000 (127,000) tons; total, 1,006,000 (883,000) tons. Despatches of spun iron pipes and castings, excluding Staveley, were:—Home, 310,000 (246,000) tons; export, 83,000 (87,000) tons; total 393,000 (333,000) tons.

OLDHAM & SONS, LIMITED—Interim dividend for the year ending March 31, 1961, is 7½ per cent.—an effective increase of 2½ per cent. adjusting for the one-for-two scrip issue. A total dividend of 17½ per cent. has been foreshadowed.

CLEVELAND BRIDGE & ENGINEERING COMPANY, LIMITED—Net profit for the year ended September 30, 1960, was £119,813 (£51,248), after tax of £23,000 (£16,000). Final dividend maintained at 5 per cent. makes 6½ per cent. and a 3 per cent. bonus is to be paid.

AVELING-BARFORD, LIMITED, power-driven plant manufacturers, of Grantham (Lincs)—The dividend is raised to 20 (12½) per cent. for the year ended September 30, 1960. Group profits expanded to £728,333 (£489,937), and the net profit is up from £203,848 to £370,631.

RANGE BOILERS, LIMITED, copper boiler and cylinder manufacturers, of Stalybridge (Ches)—All the share capital of A. C. Scott & Company, Limited, electrical resistance wire manufacturers, of Wythenshawe, Manchester, has been purchased. The existing directors and management will continue.

UNIVERSAL GRINDING WHEEL COMPANY, LIMITED—Group profit, before tax, rose from £852,585 for 1958-59 to £1,240,021 for the 53 weeks to October 1, 1960. The dividend is effectively increased by 5 per cent. to 20 per cent., tax free, as forecast, with a second interim, in lieu of final, of 12½ per cent.

GUEST, KEEN & NETTLEFOLDS, LIMITED—Of the 6,582,011 ordinary shares offered to stockholders at 70s. a share, about 97 per cent. have been taken up. The remaining shares have been sold for the benefit of those holders to whom they were provisionally allotted. The one-for-six issue was to raise £22,600,000.

SIMON-CARVES, LIMITED—Mr. J. P. V. Woollam has been appointed deputy chairman. He joined the company in 1916, was appointed a director in 1945, and a joint managing director in 1953. He is also a director of the holding company, Simon Engineering, Limited, and of a number of subsidiary and associated companies.

AURORA GEAR & ENGINEERING COMPANY, LIMITED—Acceptances have been received in respect of 91.65 per cent. of the 1,580,000 1s. ordinary shares offered by way of rights at 2s. 6d. each. Excess shares were allocated as follow: Applications up to 100, in full; 101 to 400, 100 shares; 401 upwards, about 25 per cent. of the application.

LEEDS FIRECLAY COMPANY, LIMITED, Wortley, Leeds—The board is having discussions with an American Corporation "of international repute" with a view to the company being associated with it in the manufacture in the UK of a highly specialized type of refractory, Lt.-Col. R. B. Leech, chairman, told the annual meeting at Leeds.

DAVID BRIDGE & COMPANY, LIMITED, specialist engineers to the rubber, plastics, and cable making industries, of Rochdale—Net profits in the year ended September 30, 1960, were £140,486 (£227,549), after tax of

£154,120 (£224,896). Final dividend of 15 per cent. makes 22½ per cent., compared with 25 per cent. previously, which included a 5 per cent. bonus.

CHURCHILL MACHINE TOOL COMPANY, LIMITED—Having considered the offer by the Birmingham Small Arms Company, Limited, to acquire each of the 5s. ordinary shares for 40s. cash and every £10 of the 6 per cent. preference shares for £11 of BSA 6 per cent. "B" preference shares, the directors state that they intend to recommend holders to accept.

CRABTREE ELECTRICAL INDUSTRIES, LIMITED—Sales during the year ended July 31, 1960, reached a record level. Net profit before tax was £45,535—16 per cent. higher than 1959—but, says Mr. J. A. Crabtree, the chairman, "it is disappointing that as a result of all the strenuous efforts made during the year, taxation negatives the result and the net profit after taxation shows a slight reduction."

DUPORT, LIMITED—At an extra-ordinary general meeting which followed the annual meeting last week, the board's capitalization proposals were approved. A scrip issue is recommended of one new ordinary share for every two ordinary shares held, which will require £1,887,247 of the reserves. The issue will absorb almost the whole of the unissued shares and the authorized capital is to be increased to £10,000,000.

WORSLEY MESNES IRONWORKS, LIMITED, colliery engineers and iron founders, of Wigan (Lancs)—Net loss of £3,671 was incurred in the year ended September 30, 1960, compared with a profit of £22,275, after crediting unrequired tax of £2,020 (£16,844 tax charged after deducting over-provision of £2,030). No ordinary dividend is to be paid, compared with 12½ per cent. previously.

DAVID BROWN CORPORATION, LIMITED—Highest profit since 1955 was made in the year ended June 30, 1960, but only by careful control of overheads and an 11 per cent. increase in throughputs, states Mr. David Brown, chairman. Investment in plant, with the increasing order volume preventing safe reduction of inventories, and the "vicious" slice of earnings taken by the Inland Revenue, have made it impossible to improve the liquid position further, Mr. Brown says. As in previous years no ordinary dividend is recommended.

JOHN RIGBY & SONS, LIMITED, steel and brass wire manufacturers, of Bradford—Group profit for the year ended August 31, 1960, was £187,975 (£60,959), after all charges including taxation. Mr. H. W. Rigby, chairman, states that this exceeds the group's previous best by £24,864. Under conditions of generally sustained demand the group has been fully employed, and has benefited from increased turnover and planned spending for improved efficiency.

Dorman Long Meets Dividend Forecast

GROUP net profit of Dorman, Long & Company, Limited, iron and steel manufacturers, constructional engineers, and bridge builders, etc., of Middlesbrough, was £2,626,297 (£3,087,929) in the year ended September 30, 1960, after tax of £4,475,540 (£2,054,506). The profit attributable to the parent company was £2,598,912 (£3,076,689).

Once again the company transferred £1,000,000 to fixed assets replacement reserves. The final dividend of 6½ per cent. maks 10 per cent. as forecast, compared with the previous equivalent of 8 per cent.

Orders Placed

Davy-Ashmore Furnaces for Australia

TWO 200-ton basic oxygen converter furnaces for the Newcastle, New South Wales, works of the Broken Hill Proprietary Company, Limited, are to be designed and supplied by Davy & United Engineering Company, Limited, a subsidiary of Davy-Ashmore, Limited. The order is worth about £300,000 and was gained in the face of strong competition from the UK and Germany.

Hitherto furnaces of this type have been limited to a capacity of around 100 tons. These two larger furnaces will be made at the Stockton works of Ashmore, Benson, Pease & Company, Limited, which has an agreement with the Pennsylvania Engineering Corporation, of the US, which gives it access to the US company's engineering and design experience in this field.

MEMBER of the Metal Industries, Limited, group, Shipbreaking Industries, Limited, has ordered 87 Harris 62-2F oxy-propane blowpipes from British Industrial Gases, Limited, which is controlled by the British Oxygen Company, Limited.

CONTRACT to design, engineer, and supply a sulphur recovery unit in Argentina, has been placed with Parsons Powergas, which is an association of Ralph M. Parsons Company, US, and the Power-Gas Corporation, Limited, of Stockton-on-Tees.

EQUIPMENT for railways and other transportation for a £16,200,000 project to develop iron-ore and manganese deposits in Portuguese East Africa has been ordered from Krupp, of Essen, by the Portuguese Government. The contract is worth just over half of the total cost of the project.

BROOM & WADE'S PROFIT EXCEEDS £1,000,000

FOR the first time the consolidated profit of Broom & Wade, Limited, manufacturers of air compressors and pneumatic tools, etc., of High Wycombe (Bucks), exceeded £1,000,000 in the year ended September 30, 1960. The chief reason for the increase to £1,044,922 (£851,858), states Mr. H. S. "Dick" Broom, the chairman, was greater turnover achieved through more efficient production than ever before. The final dividend of 17½ per cent. maintains a total dividend of 22½ per cent. on increased capital.

With the help of the Canadian company, distribution of Broomwade products has begun on a modest scale in the US. To give support to this venture and to improve sales and service in Canada, new offices and workshops are being built outside Toronto. The current order-book is higher than at the same time last year and Mr. Broom looks forward with confidence.

MECHANICAL HANDLING has a real contribution to make to increased productivity and exports, stated Mr. John Oldham, chairman of Oldham & Son, Limited, manufacturers of storage batteries, miners' safety lamps, and equipment, of Denton (Lancs), when he opened the company's new depot in Birmingham recently. A new system of palletized transport is being developed to handle goods passing through Birmingham.

IRON AND STEEL TRADE

STRONG conditions continue to characterize many groups in the iron and steel trade and a generally firm undertone indicates expectations of an early recovery in trading conditions, in spite of a gloomy note by some critics following the publication of the annual accounts of the bigger steel concerns. The heavy steel products market is not doing so well as it might, largely through lack of interest from the basic industries, but there is a heavy current demand for building steels and the forward outlook is very favourable.

Pig-iron

Advantage will be taken of the Christmas holiday to carry out essential repairs to plant and cupolas so as to ensure as far as possible uninterrupted production on the return to work. There are ample supplies of pig-iron in all grades and output is well-maintained, particularly in the Midlands.

At one time low phosphorus pig-iron was not too easy to come by, but with more plant brought into use, reports are that supplies are adequate in all parts of the country. The position of basic pig-iron for steelmaking remains strong.

Ferro-alloys

Despite the approach of the holiday, business continues active and it would appear that the only actual lull in demand will be on the holiday days. It is likely that the major alloys will be unchanged in price on January 1, 1961, although a heavy call exists for certain items. Ferro-silicon and both the low- and high-carbon grades of ferro-chrome are well supported. There is a good demand for ferro-manganese.

Interest in ferro-titanium and ferro-niobium is at a good level, and ferro-tungsten is now moving at a slightly better rate. Supplies of ferro-vanadium and ferro-molybdenum are in good demand.

Semi-finished Steel

Work on hand is sufficient to enable the re-rollers to resume production at good levels after the Christmas holiday. The demand for their products is well maintained, though some easing is noticed in the request for bright drawn bars and hot rolled strip. There is no diminution in the pressure for reinforcing rods.

Most of the re-rollers have fairly good stocks of mild steel semis and home steelworks continue to send forward substantial tonnages. Most of the re-rollers would welcome a similar situation so far as carbon and alloy steel billets, etc., are concerned.

Finished Steel

The approach of the holiday saw a slight falling off in the call for sections and joints, but this has had no effect on the makers who are fully committed for the first quarter of 1961. The recession in the car industry has meant an easing in the demand for cold reduced sheets but there is no let-up in the call for corrugated and flat galvanized sheets, cold rolled strip and good commercial quality bright drawn bars.

Capacity is still available for black sheets and hot rolled strip and additional tonnage would be acceptable for inclusion in current and forward programmes. There is no improvement in the requirements for colliery requisites.

Steel Production Record for SCOW

FOR the first time the universal slabbing mill at the Abbey Works of the Steel Company of Wales, Limited, rolled over 65,000 tons in one week, when in the week ended December 11, 65,341 tons of steel ingots were rolled. The ingot output of the company's four steelmaking shops reached a record total of 60,155 tons in the same week.

Commenting on the figures, Mr. W. F. Cartwright, assistant managing director, said: "So far as we know this is the highest tonnage of ingots ever rolled by a slabbing mill in one week. It completely justifies our decision to install the universal slabbing mill two years ago in expectation of a higher output. Last week's total ingot output is higher than that envisaged for the plant at present in operation and shows that the steel shops are more than capable of producing the tonnages required under our third development plan."

RECORD 17,000,000 TONS UK IRON-ORE IMPORTS

NEW record for iron-ore imports into the UK is expected to be set up this year. This was forecast last week by Mr. John Jeffryes, Middlesbrough manager of the British Iron & Steel Corporation (Ore), Limited, the import agency owned by Britain's iron and steel industry, who said that the national figure this year would be about 17,300,000 tons, compared with the 1957 figure of 15,972,000 tons.

"It is now quite clear that both nationally and locally we shall beat by a comfortable margin the 1957 total, which was a record," he said. Middlesbrough's ore imports in 1957 totalled 3,470,000 tons, compared with this year's expected total of 3,850,000 tons. Ore imports into the Tyne this year are expected to total 1,200,000 tons—some 200,000 tons better than the 1957 figure, while at Hartlepool imports are expected to reach 750,000 tons against the 1957 figure of 595,000 tons.

FIRTH BROWN TOOLS, LIMITED, Sheffield, has granted to Sheffield University Department of Mechanical Engineering a research fellowship and a research scholarship. The tenure of the Fellowship is for five years and it will deal with the engineering, design, and performance of industrial cutting tools. Firth Brown will provide facilities at its works for projects which will be carried out at the university and at the works.

Coalfield News

Yorkshire's Thrifty Miners

"I CAN kill the popular idea that the miner is a thriftless person, with simple statistics," said Mr. John Deans, Yorkshire Regional Commissioner for National Savings, last week, when he announced that in the year ended September, 1960, the Yorkshire miners saved £2,250,000. Two in five miners saved through National Savings, compared with one in five 12 months ago, he added.

In a period of six months in 1948, the miners saved £268,000, and in the same period this year they saved £1,201,000. "Their saving is exceptional," was Mr. Deans' verdict. "No other industry can compare with them."

SIX BELLS COLLIERY Disaster Fund had reached over £100,880 by last weekend.

OUTPUT TARGET of 1,000,000 tons at Bestwood Colliery (Notts) has been reached this year two weeks ahead of last year.

AFTER 49 YEARS at Valleyfield Colliery (Fife) Mr. Peter Scott has retired. For the past 35 years he has been a surface foreman.

MINERS at Cumnock (Ayrshire) are refusing to rent the town council's new all-electric houses because they cannot burn their concessionary coal in them.

AFTER 51 years in the industry, two miners at Lochhead Colliery (Fife), Mr. R. Gartshore and Mr. P. Wynne, have been presented with long service awards.

A HEATING which developed in the Barnsley Seam at Markham Main Colliery, near Doncaster (Yorks), was dealt with by specialist workers. Work was uninterrupted.

TV VIEWERS suffering from interference on their sets as a result of the excavation of the open-cast mining site at Abertillery have been offered wired vision and sound by the National Coal Board. The board has offered to bear the brunt of the cost.

OBJECTIONS have been raised by the local branches of the National Union of Mineworkers and the Labour party to the heating of the new £16,000 working men's club being built at Royston (Yorks). The club will have electric floor heating and only two coal burning appliances.

IMMEDIATE DONATION of £3,000 is to be made by the South Wales executive of the National Union of Mineworkers to the Lord Mayor's Flood Distress Fund for Wales and Monmouthshire. The executive is also asking 81,000 miners to agree to a pay levy which would bring in an additional £8,000.

POLISH-BORN miner, Mr. Z. Lipinski, who is employed at Houghton Main Colliery (Yorks), was secretary and chief organizer of the Houghton Main and Dearne Valley Cagebird Society's annual show last week. In four years Mr. Lipinski has become one of the best-known breeders and exhibitors of canaries in south Yorkshire.

A £36,000 COMMUNITY CENTRE, 75 per cent. of the cost of which was met by the Coal Industry Welfare Organization, has been opened at Penyrheol, Caerphilly. The opening ceremony was performed by Mr. W. H. Crews, formerly secretary of the South Wales Area of the NUM, and an active member of the divisional committee of CISWO.

EVERY EFFORT is being made to find alternative employment for men at Esperley Lane, Haggs Lane, Malton, Barlow Towneley, and Randolph collieries, which are to close next year, Mr. Sam Watson, secretary of the Durham Area of the National Union of Mineworkers, said at the weekend. At the moment, less than 100 men out of a total of 537 affected, remain to be placed.

SIR JOHN ERSKINE TROPHY, which is awarded annually to the winning colliery savings group in the National Savings League in Scotland, was won for the third time in four years by Pennyvenie 2/7 Colliery, Dalmellington (Ayrshire). The Hillhead Trophy was won by the West Ayr Area office savings group. The trophies were presented last week by Mr. R. D. Glass, general manager of the West Ayr Area of the Scottish Divisional Coal Board.

RE-OPENING of Lappyburn open-cast coal site near Kirkcaldy (Fife), has led to a protest by miners at Michael Colliery, East Wemyss. The colliery union branch is sending a resolution to the national executive of the NUM and to the Scottish Divisional Coal Board protesting against the Opencast Executive's granting of a licence to re-open the site. Mr. Max Meharry, union delegate at the colliery said: "It seems stupid to close down pits, and then reopen an open-cast site from which coal can be got at any time."

NCB Area Reorganization in Scotland

CHANGE in the Area organization of the Scottish Divisional Coal Board is to be made by forming two new Areas out of the present Alloa, West Fife, and East Fife Areas. The new Areas will be the Alloa Area consisting of the present Alloa Area and the Valleyfield Group of the West Fife Area; and the Fife Area consisting of the present East Fife Area and the Bowhill, Kelty, and Lochgelly Groups of the old West Fife Area.

Mr. William Rowell, at present Area general manager of the West Fife Area, will be Area general manager of the Alloa Area and Mr. T. D. M. Scrimgeour, at present Area general manager of the East Fife Area, will be Area general manager of the Fife Area.

The Fife Area will be controlled through the offices at Cowdenbeath and Dysart and the changes will take effect on January 1, 1961.

Increased Coal and Coke Freight for British Railways

BRITISH RAILWAYS carried 14,500,000 tons more freight during the first 47 weeks of 1960 than during the corresponding period last year, it was reported at last week's meeting of the Winter Transport Central Joint Conference. The increased freight included 7,700,000 tons of minerals and 4,400,000 tons of coal and coke.

To reduce likely delays arising from staff shortages, arrangements have been made with trade and industry and in particular the National Coal Board and its customers, for many more trains to run direct from originating areas to consumer areas.

In view of the progress which has been made in staffing and in revising working arrangements, BTC is confident it will be able to deal with any traffic offered this winter unless working is affected by protracted bad weather or serious outbreaks of sickness.

EXPLOSION in a coal mine in Turkey last week killed 18 men and injured 13 others.

THE COAL TRADE

ALTHOUGH the pressure for supplies of domestic coals and boiler fuels was expected it has not made it any easier to handle. Merchants, in order to maintain good relations with customers, are doing their best to meet the flood of last-minute orders, but for more than a week in most places no assurances have been given of pre-Christmas delivery. In some parts there is a time-lag of three weeks in fulfilling orders. The one bright spot is that weather conditions are not proving too great a hindrance to transport.

SCOTLAND

Glasgow—An indication of future requirements was given in the recent wintry spell when 41,000 tons were uplifted in one week from undistributed stocks to meet the deficit on current output. This is the same amount by which production is down from a year ago. Pithead stocks should be restored to a practical working level by March according to official statements. A big expansion in throughputs at electricity works is helping to clear sizeable tonnages of the more difficult grades of small coal, while coke ovens are rapidly eating into the large accumulations of carbonizing smalls.

Although by this time a year ago the steel industry was recovering from the recession and ovens were consuming 25,000 tons a week, weekly consumption has now risen to nearly 40,000 tons. Fresh-wrought supplies of all grades of washed smalls are moving away promptly, and the small balance of duff presents little problem. Singles keep tight, and pearls are only slightly more plentiful, while doubles and trebles are finding ready outlets. Disposals of house coal have paralleled the movement of electricity fuel, and are at present some 10,000 tons a week higher than last year. Large is consequently scarce, although a small tonnage is still held at pithead to provide a cushion for the opening weeks of the new year. Processed fuels are also tight, and certain branded types are available to "regular customers only" in many instances. All grades of anthracite are fully booked, including beans. Demand for metallurgical coke is still enormous, but it is expected to slacken soon with the approach of the holidays.

Fife and Lothians—Output from both zones is clearing well. Sized sorts meet a sustained demand and are sold well ahead in many cases. Washed smalls are only sparingly offered. Public demand for large coal is increasing, but depots are keeping pace. The export market keeps quietly steady.

Miners May be Moved to Ease Manpower Shortage

IT may be necessary, in order to get the manpower needed for the Yorkshire and Midland coalfields, for the National Coal Board to move miners and their families from areas where pits are closing. Mr. Roy Mason, MP for Barnsley, said this when speaking to retired miners of the Wharncliffe Woodmoor Colliery last week. He added: "Mr. Robens, chairman-designate of the NCB is trying to shift the industry out of its present gloom and despondency.

Optimism must be created, otherwise the industry would die. Yorkshire and the Midlands urgently required young men, but they were not going to get all they needed in those coalfields. A movement of men and families from dying areas might be required."

Coal Stocks Down to 30,000,000 Tons

THERE should be no cause for alarm because of the extent of undistributed coal stocks for quite some time to come. At 30,743,000 tons they are nearly 6,000,000 tons less than a year ago and with coal consumption up by 5 per cent. on 1959 and production about 6 per cent. down on last year's figures, a sudden and heavy demand could, in a very short time, completely wipe out any provident balance.

Consumers' stocks showed a slight fall in the week ended December 10—not an indication of their improvidence but more a sign that while the call on solid fuel continues, it is not so easy to keep stocks topped up.

There were 584,180 wage-earners on colliery books on December 10, against 635,490 on December 12, 1959, the numbers engaged at the coal face being 220,710 and 244,440 respectively. Total absenteeism (all workers) in the week ended December 10 was 13.07 per cent., compared with 12.51 per cent. in the week ended December 12, 1959. Output at the face was 4.052 tons and overall 1.427 tons in the week ended December 10, compared with 3.878 and 1.393 tons in the week ended December 12.

The following table gives (in tons) the output of saleable mined coal by division in the week ended December 17, and the tonnage lost through all causes (holidays, disputes, and go-slows):—

Division.	Week ended December 17, 1960.		Week ended December 19, 1959.
	Total output.	Tonnage lost.	Total output.
Scottish	354,500	2,500	387,200
Northern (N&C) ..	253,900	—	261,000
Durham	483,700	—	493,400
North-Eastern ..	923,500	500	947,300
North-Western ..	269,400	100	296,100
East Midlands ..	946,500	—	973,200
West Midlands ..	300,000	—	323,700
South-Western ..	410,600	1,100	438,700
South-Eastern ..	35,300	—	36,800
Great Britain—			
Deep-mined coal ..	3,977,400	4,200	4,157,400
Other deep-mined (including licensed mines) ..	37,000	—	54,300
Open-cast coal ..	160,300	—	189,100
TOTAL ..	4,174,700	4,200	4,400,800

COAL AND COKE shipments from the Tyne in November amounted to 606,248 tons—an increase of 105,849 tons or 21 per cent. over November, 1959.

DSIR Report Warns on Shipyards Recession

WARNING that shipbuilding costs are too high to meet foreign competition, and that the industry may be facing a prolonged recession is given in a report published on Thursday of last week by the Department of Scientific and Industrial Research. The report says that the British industry is facing "very severe competition for orders," and without cutting costs might not be able to retain its share of the market when demand improves. Production would have to be cut in the next few years.

The Shipbuilding Conference, in a statement issued the same day, said the release of the published report was with the knowledge and concurrence of the industries concerned. "It is hoped that publication will now put an end to erroneous and damaging speculation about its contents which have appeared in the Press in recent weeks. A draft report, which gave rise to these speculations, has been the subject of detailed discussion between the industry and DSIR, and the inaccuracies which led to strong opposition to its publication have now been corrected."

The statement adds: "The report contains a number of criticisms, but shipbuilders and marine engineers welcome constructive suggestions, and are anxious that their research activities should be as comprehensive and forward looking as possible. . . While the industry accepts that the intention of the DSIR report is to be helpful towards these objectives, it is by no means in agreement with some of the comments and views expressed, especially as regards achievements in the field of marine engineering."

The DSIR report, compiled by the Department's economic committee, criticizes shipbuilding for spending less than other industries on research and development; blames labour relations and the impracticability of shift work for slowing the introduction of new methods and handicapping the best use of space and machinery. It suggests concentrating production, with more standardized equipment and components.

Commenting on the report last Friday, Col. T. Eustace Smith, president of the Shipbuilding Conference, said in Middlesbrough: "The British shipbuilding industry is a good as, if not better than, that of any other country. The report was "not a report on the industry as a whole, and ought not to be read like that. It should be a report simply on research."

"Because we are in difficulties, it does not mean that the rest of the world is all right. The Continental shipbuilders are in just as much difficulty, and Japan is even worse off. In Holland and Germany they are having to import labour from Italy and Spain. Their costs are rising rapidly."

Mr. E. J. Hunter, chairman of Swan, Hunter, & Wigham Richardson, Limited, shipbuilders and engineers, speaking at South Shields on Monday, said that there were signs that British yards were again beginning to lead the world, and with the passing of time, this lead would emerge more clearly.

Mr. Hunter said he wanted to correct the impression, created by the DSIR report, that the time taken in building ships in Britain compared unfavourably with that abroad. Swan Hunter and other yards were well capable of good construction performances, and the company itself had one ship planned for next year which would take no more than eight months to build. This was a far cry from the average construction time of 18 months, quoted in the report.

Newton Chambers Acquires George Royston & Sons

THE firm of George Royston & Son, Limited, of Barnsley (Yorks), has been acquired by Newton, Chambers & Company, Limited, ironfounders, engineers, etc., of Thorncliffe, near Sheffield. Royston's designs and manufactures chemical plant and equipment fabricated in mild steel, stainless steel, aluminium, and special alloys. It specializes in sulphate of ammonia plants for the manufacture of Grade "A" sulphate, and it undertakes a considerable amount of lead lining work for the coal by-product and chemical industries. Royston's activities will fit effectively into the expanding engineering division of Newton Chambers.

The business, which was established in 1928 by the late Mr. George Royston, is now controlled by his son, Mr. Douglas B. Royston.

Under the new arrangement, Mr. K. E. Walker, director in charge of the engineering division of Newton Chambers, will be chairman of the company, and Mr. D. B. Royston will continue as managing director. Mr. E. H. King will continue on the board, with Mr. M. W. Wilby, former secretary, responsible for management.

Joining the new board from the engineering division of Newton Chambers will be Mr. S. B. Rippon, general sales manager; Mr. K. Sheard, contracts manager; and Mr. R. Middleton, engineering sales manager. Mr. R. J. V. Wheeler, secretary of Newton Chambers, will be secretary of the company.

Charles Churchill Takes Over Denham's Engineering

FURTHER addition to the Birmingham group of machine-tool manufacturers, etc., Charles Churchill & Company, Limited, has been made by the acquisition of Denham's Engineering Company, Limited, machine-tool makers and ironfounders, of Halifax (Yorks). Manufacture of general-purpose lathes, for which this company is well known, will be continued and the capacity will be expanded to allow production of other machines handled by Charles Churchill.

Mr. Roy S. Denham, the chairman and managing director, will be retiring, but all other members of the management are remaining with the company. Denham's Engineering will continue to function as an autonomous unit and will, for the present, maintain its own selling arrangements.

Vickers' Director on "Trade War"

SPEAKING at the annual presentation of awards for further education to young employees of the English Steel Corporation, Limited, in Sheffield last Friday, Sir Leslie Rowan, a director of Vickers, Limited, said Britain should not be frightened of facing what Mr. Kruschev had described as war within the peaceful fields of trade. "In facing these things, do not mix up being great with being rich," he said.

Mr. Harry Parkin, the company's education and training officer, said that at the end of 1960 the number of young people with the firm undergoing training at the Sheffield works totalled 950—the highest figure at any time since the war.

NEWS IN BRIEF

TELEPHONE NUMBER of J. C. Bamford (Excavators), Limited, Rocester (Staffs), is now Uttoxeter 3122.

PIG-IRON, iron ingots, and steel ingots are among items contained in a list of goods whose import is to be liberalized by the Spanish Government as from January 1, 1961.

OUTPUT of ingots and steel for casting in the US in November fell to 6,167,000 net tons from the October figure of 6,863,380 tons and the 7,267,607 tons produced in November, 1959.

PLANS of the Nigerian Coal Corporation, Limited, to export coal to Japan have failed, Barclays Bank DCO reports. The Japanese Government will not issue the necessary import licence.

LONG-SERVICE CERTIFICATES and presentations were received last week by 10 employees of Arthur Lee & Sons, Limited, Sheffield, from Mr. G. Wilton Lee, chairman and managing director.

TURNOVER of the Siemens group of companies both at home and abroad, rose to more than DM. 4,000,000,000 in the year ended September 30, 1960, from DM. 3,640,000,000 previously.

ESTABLISHMENT of a Coventry branch of the Institution of Works Managers is planned early next year. A steering committee has been formed in the city and will initially seek new members.

PLANS for an association of past and present long-serving employees of Arthur Balfour, Limited, Sheffield, were announced by Lord Riverdale, chairman, at a recent presentation of long-service awards.

SHORT-TIME WORKING by foundrymen is to begin in January at the Sheffield steelworks of Samuel Osborn & Company, Limited, to compensate for a temporary recession in orders for some classes of work.

IT HAS BEEN ANNOUNCED that the US firm of Cessna Aircraft, Kansas, is to open a factory at Dunfermline for the manufacture of its valves, pumps, and rams, mainly for agricultural and earth-moving machinery.

THE MINISTER OF HEALTH has informed Mr. Ellis Smith, MP for Stoke-on-Trent South, that preventive measures now in force should lead to a decrease in the number of deaths associated with pneumoconiosis.

NEGOTIATIONS are in progress for the acquisition by the National Coal Board of property in the centre of Lancaster where it will establish an order office and showroom for demonstrating solid fuel appliances.

HOT-ROLLING PRODUCTION UNITS have been ordered by Usines Gustave Boël, of Belgium, and Hüttenwerk Salzgitter, AG, of Salzgitter, Germany, from Siemag, Siegener Maschinenbau GmbH, of Eiserfeld, west Germany.

A FURTHER 500 to 600 men are likely to be laid off in the new year at the Cowley, Oxford, factory of the Pressed Steel Company, Limited. This would bring the total involved since the start of the recession in the car industry to over 1,200.

EMPLOYEES at the Ebbw Vale steelworks of Richard Thomas & Baldwin Limited, now enjoy background music with their meals. The music, by Reditune, Limited, is "piped" to the four works dining-rooms which cater for nearly 10,000 people.

FIVE COMMERCIAL APPRENTICES employed by Imperial Chemical Industries, Limited, have been awarded diplomas by the Association of British Chambers of Commerce. They are the first to complete courses under the association's scheme started in May, 1957.

AGREEMENT is expected to be signed shortly for the erection of a tractor factory in the Brazilian State of Minas Gerais by the Kloeckner-Humboldt-Deutz engineering concern. A 50-50 per cent. partnership is proposed with a Brazilian group which has official support.

TO EXTEND its sales and service arrangements in Canada, R. W. Crabtree & Sons, Limited, printing machinery manufacturers, of Leeds, has established a subsidiary in New York. Mr. Norman Porter, formerly a director of the Australian subsidiary, has been appointed vice-president in New York.

HIGHEST OUTPUT ever achieved at the Southwick-on-Wear yard of Austin & Pickersgill, Limited, ship builders and repairers, of Sunderland, was reached on Monday with the launching of the 18,000-ton ore carrier Cheviot. The company has sufficient work on hand to keep its staff fully employed next year.

CORNER STONE of the new Goodyear International Corporation's $12,000,000 tyre and tube plant at Ballabgarh, India, was recently laid by Manubhai Shah, Indian Minister of Industries. When completed in 1961 the plant will produce passenger, truck, and farm tyres for markets throughout India and the Far East.

IN A RENEWED EFFORT to save the jobs of 280 engineers who are be paid off during the next three months by William Beardmore & Company, Limited, Parkhead Forge, Glasgow, the shop stewards are to seek a joint meeting with the management and that of the parent company, Thos. Firth & John Brown, Limited, Sheffield.

FRENCH producer of coke-furnaces and allied products Compagnie Générale de Construction de Fours has merged with a company in the same field Distillation des Combustibles et Construction de Fours à Coke (Disticoke). Following the merger, the Cie. Générale is changing its name to Carbonisation, Entreprise et Céramique.

TO ACHIEVE closer liaison between their technical, production, and sales departments, Chloride Batteries, Limited, is transferring its sales headquarters from London to the head office and principal manufacturing centre in Manchester, on January 2, 1961. A London sales office will be maintained at the present address until January 30, 1961, when it will be transferred to 137, Victoria Street, London, S.W.1 (telephone: VICtoria 2299, telegraphic address: Chloridic, Sowest, London).

SINCE Armstrong Whitworth & Company (Pneumatic Tools), Limited, Tynemouth (Northumberland), was acquired in 1951 by the Thor Power Tool Company, Aurora, USA, the complete range of tools and equipment has gradually been integrated with the American company's product. The final consolidation with the parent organization is the change of name to Thor Tools, Limited, Tynemouth. The telephone number, North Shields 3111/2/3 is unchanged but the telegraphic address is now Thortools, Tynemouth.

SIMPLEX low carbon ferro-chromium for the manufacture of extra low carbon stainless steel is now available jointly from Union Carbide, Limited, and the London & Scandinavian Metallurgical Company, Limited. The specification runs maximum 0.01 per cent. carbon, maximum 2 per cent. silicon, 68-71 per cent. chromium. Simplex is being supplied by Union Carbide International Company, US, for distribution by the UK companies, until London & Scandinavian Metallurgical Company's European associates start production under licence from UCI.

In Parliament

RUSSIAN FUEL OIL-CEMENT DEAL

STATING that Russian fuel oil was being imported into the UK at a price at least £2 a ton lower than the market price, MR. ALAN FITCH (Lab.) suggested that the cement company involved had "pulled a fast one" over the Government by exporting a token export of cement in return for fuel oil at dumping prices. Refuting this suggestion, MR. F. J. ERROLL, Minister of State, Board of Trade, said the Portland Cement Company, Limited, received its licence in February, 1958, and it was quite openly entered into. But other licences had not been issued since then.

In a written answer to MR. G. A. PARGITER (Lab.), MR. ERROLL said that one application for a licence to import Russian oil in exchange for exports of steel pipe had been received by the Board of Trade, but no representations about the import of Russian oil in exchange for pumping equipment had been received.

CLOSURE OF LOCOMOTIVE PLANT

PROPOSED closing of the works of Metropolitan-Vickers-Beyer-Peacock, Limited, railway traction engineers, at Stockton-on-Tees, was raised by MR. GEORGE CHETWYND (Lab.), who asked what action was being taken to meet the situation. MR. N. MACPHERSON, Parliamentary Secretary to the Board of Trade, said his department was at present trying to find an alternative tenant.

MR. CHETWYND said that as this was a Government-financed factory, it ought not to lie idle after the present firm left it in February. MR. MACPHERSON replied that it could not be guaranteed that at no time would it lie idle, but his department would do its best.

RESPIRATORY CONDITIONS

COULD the Minister of Pensions and National Insurance either give further consideration to the definition of pneumoconiosis, or prescribe emphysema caused or aggravated by the conditions of the work of coal miners as an industrial disease? MR. JAMES GRIFFITHS (Lab.) asked.

Replying, the MINISTER, Mr. J. Boyd Carpenter, said his department kept in close touch with the research activities of the Medical Research Council and others bearing on such problems of respiratory conditions, but there was at present no evidence to justify the action suggested by Mr. Griffiths.

COAL AND FUEL OIL

COMPARATIVE figures of the original estimated percentage increase of both coal and fuel oil to be used by electricity power stations in 1960 as against 1959 and the actual percentage increases were asked for by MR. ALAN FITCH (Lab.).

MR. RICHARD WOOD, Minister of Power, in a written answer, said that in the first 49 weeks of this year power stations in Britain used 4,500,000 tons, or 10½ per cent. more coal and 1,000,000 tons, or 27 per cent. more fuel oil than in the same period of 1959.

THE HOUSE ADJOURNED on Wednesday, and will reassemble after the Christmas Recess on January 24, 1961.

NO ALTERATIONS had been considered by the Government since December 9 in the capital investment programme of the National Coal Board.—Minister of Power in a written reply to Mr. Richard Kelley (Lab.).

100—and Still Scoring

ONE hundred years old this year and achieving spectacular success in increased productive efficiency. That is the proud record of Renishaw Park Colliery in No. 1 Area, East Midlands Division of the National Coal Board. During the past four years, by new planning and full mechanization at the coal faces, productive efficiency has been increased by more than 100 per cent., and a pit which was once considered to be below average is now regarded as one of the best in Derbyshire.

Overall output per manshift during November this year averaged 58.2 cwt., compared with 37.4 during 1959 and 23.3 during 1957. Face OMS in November was 161.4 cwt., compared with 99.8 cwt. in 1959 and 55.7 cwt. in 1957. A few days ago the 530 men at Renishaw achieved the pit's highest-ever daily total of 1,792 saleable tons—representing nearly 600 tons from each of the three coal faces. Productivity on that day was 73.3 cwt.

Renishaw started life as a shaft mine, and three of the four seams there are now worked out. Today's output is all from the Chavery Seam, 3-ft. thick, which is reached by a drift, or tunnel, driven in 1951. The three coal faces each 177 yds. long, lie about 1½ miles from the surface, and each is equipped with an Anderton disc shearer, installed during the past two years. Each of these machines today cuts well over ¼ mile of coal per shift and the bulk of the product goes for industrial use. The coal reaches the surface by a system of conveyors without having to be touched by hand or shovel.

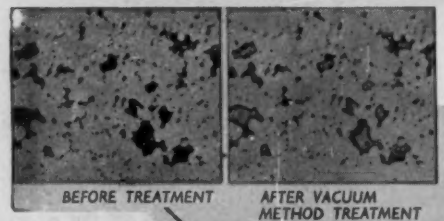
Mr. Norman Siddall, No 1 Area general manager, said: "Renishaw Park was at one time considered to be a poor colliery, but the men there have welcomed the new planning and full mechanization which has taken place and today there is a very fine team spirit among them. They have revealed a remarkable aptitude for mechanized mining. Everyone at the pit, management and men, is to be congratulated on achieving an excellent advance in general efficiency."

Coal Chartering

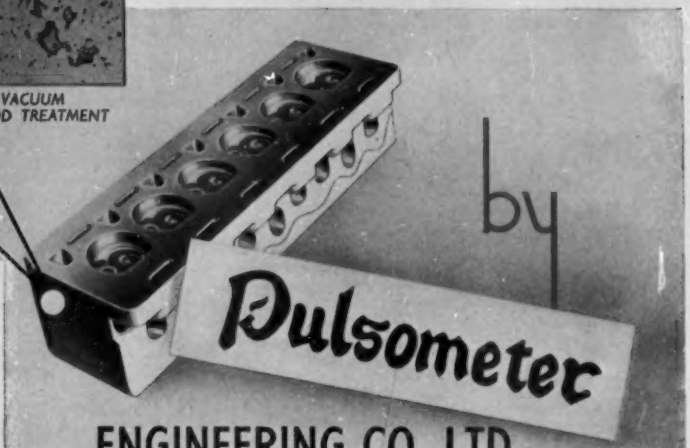
THE market from Hampton Roads, irrespective of destination, is quiet with chartering very slow to develop due in some cases to lack of inquiry and charterers' difficulties finding suitable tonnage for certain destinations. Nothing further has been reported from Hampton Roads to Antwerp-Rotterdam-Amsterdam and nothing is quoted although there are prospects of some re-let business becoming available for January. Large tonnage approaching the 20,000-ton mark was recently fixed from the Roads to Japan at $8.15 and 10,500 tons for middle of January to Chiba-Moji Range at $8.35, with interest maintained. To the Brazils, 13,500 tons has been fixed to Rio, December 18/29, at $5.75, and in other directions 18,500 tons to Yugoslavia for second half December fetched $5.00. Lourenço Marques/Cape Town paid 20s. f.i.o. for December and January/February loaders.

Polish charterers have recently fixed 5,000 tons prompt to Tunis at 34s. f.i.o. and 3,100 tons to West Coast Ireland for December at 42s. one port, 44s. 6d. two ports discharge. As far as the UK is concerned, Wales/West Italy reports 5,400 tons for prompt delivery at 23s. 9d. with some interest maintained, but generally speaking the UK market to the Mediterranean area is very quiet.

SEALING OF FERROUS & NON-FERROUS CASTINGS BY



Impregnation



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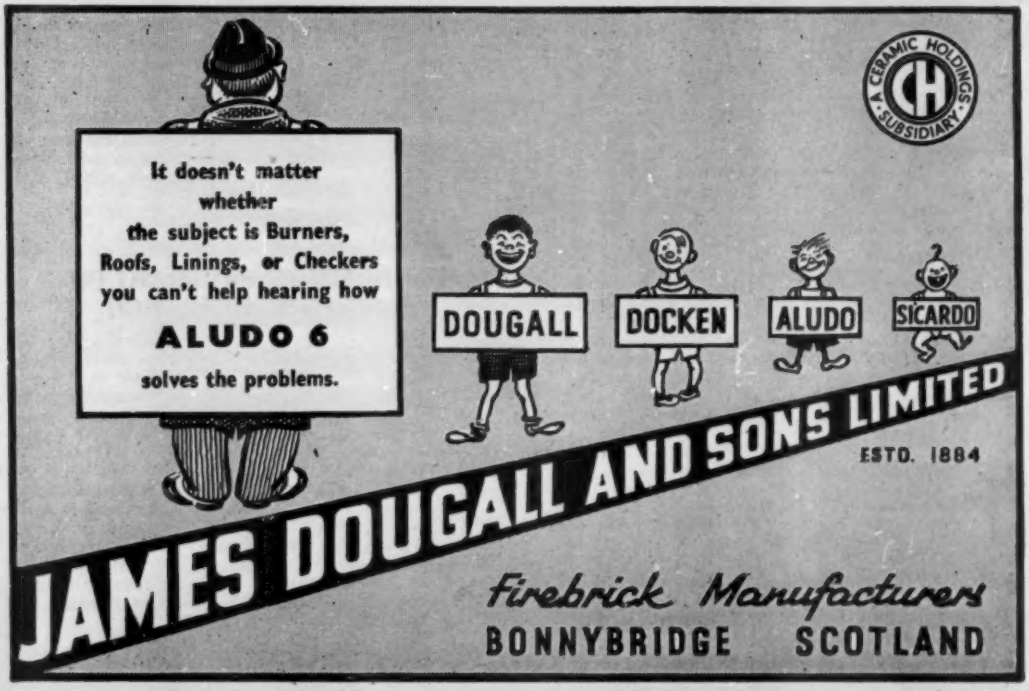

Boosting Exports to Western Hemisphere

SCOPE of the Dollar Exports Council, which has led Britain's export drive on the dollar markets, is to be expanded to cover in addition to its existing markets, the balance of the Caribbean and of South America, and is being re-named the Western Hemisphere Exports Council. This was announced on Thursday of last week by Lord Rootes, who has been chairman of the Dollar Exports Council since its formation in 1951, and who will continue as chairman of the re-formed body.

Lord Rootes said: "When the council was first established we were in greater need of dollars than of any other currency. Although the dollar markets are, in absolute terms, as vital as ever, today the crying need is for more exports over-all, whether they be to Alaska or to Argentina, to Canada or to Chile. That is why we are extending our front. We have been marking time in many of these important Western Hemisphere markets, and this council is pledged to do all it can to regain the forward thrust, particularly in those Latin American and Caribbean markets which, now for the first time, come within our ambit.

"For instance, the UK is today responsible for supplying only some 6 per cent. of the total imports of the Latin American countries. We are buying approximately twice as much from these countries as we are selling to them. During the first three quarters of 1960 our exports to the Latin American countries were worth £118,000,000; yet we imported from them goods worth no less than £242,000,000." The council will, as before, be a private organization run by businessmen to stimulate and help their colleagues in industry and commerce. It will be sponsored by the principal national trade organizations, and the Government departments mainly concerned with its work will be represented on its membership.

Members of the council will serve for three years, and among those serving the various industries are: Mr. M. Bellhouse, deputy chairman, Pressed Steel Company, Limited (motor vehicles), Mr. F. Charlton, chairman, Furness Withy & Company, Limited (shipping), Mr. E. J. Hunter, chairman, Swan, Hunter, & Wigham Richardson, Limited (shipbuilding), the Hon. Hugo Kindersley, director, Steel Company of Wales, Limited, etc. (merchant banking), Sir Norman Kipping, director general, Federation of British Industries, Sir Percy Lister, chairman R. A. Lister & Company, Limited (agricultural, lighting, diesel, and marine engineering), Lord Netherthorpe, deputy chairman, Richard Costain, Limited, and director, Fisons, Limited (agricultural chemicals and construction), Lord Polwarth, director, Peace River Power Development Company, Limited (banking and investment), Lord Riverdale, chairman, Arthur Balfour & Company, Limited, and other engineering companies (heavy and light engineering), Mr. W. W. S. Robertson, managing director, W. H. A. Robertson, Limited (heavy engineering), Sir Leslie Rowan, director, Vickers, Limited (aircraft, heavy and light engineering), Mr. W. D. Scott, commercial director, Imperial Chemical Industries, Limited (chemicals), Sir Miles Thomas, chairman, Monsanto Chemicals, Limited (chemicals), Sir Bertram Waring, chairman, Joseph Lucas (Industries), Limited (light engineering), Sir John H. Woods, director, English Electric Company, Limited (electrical engineering).

Delta Metal Forecasts £3,500,000 Profit

GIVEN no general deterioration in trading conditions, there is a good chance of the Delta Metal Company, Limited, achieving the profit target of £3,500,000 before tax set for 1960, states Mr. W. E. Ogden, the chairman. In the second half of 1960 output has been fully maintained, but margins have tended to narrow and this trend is continuing. The £3,500,000 figure, he says, would permit the payment of a 12½ per cent. final distribution on the enlarged capital, as forecast. The fuller benefit of the recent acquisitions, additional capital, and recent expenditure will be felt next year, he says.

In connection with the latest additions to the group —Sperryn & Company, Limited, and C. H. Edwards, Limited—it is reported that their combined group net assets were £1,031,206. Combined profits, before tax, averaged £211,963 for the last five years and were £307,257 for the last year.

Finland Steps Up Steel Production

FINLAND expects to produce some 300,000 metric tons of steel products next year. At least two thirds of this total will come from the Vuoksenniska Oy steel concern which is to open a blast-furnace plant in co-operation with the Swedish Kopparberg company at Koverhar, in southern Finland, in the autumn of 1961. This plant will produce 250,000 tons of pig-iron a year from iron ore from the nearby undersea Jussarö reserves.

The State-controlled Rautaruukki company plans to spend 10,000,000,000 Finnmarks building a blast-furnace complex at Raahe, near Oulu, with an initial capacity of 300,000 tons of pig-iron from indigenous ore. A steelworks and rolling mill are to be added later.

Finland, which last year imported 460,000 tons of rolling mill products alone, including all sheet steel, produced (on 1959 figures) only some 100,000 tons of pig-iron annually (from imported raw material), some 250,000 tons of raw steel (mainly from scrap), and 257,000 tons of rolled products.

UK DOUBLES SPENDING ON SCIENTIFIC RESEARCH

SPENDING on scientific research in Britain was 40 per cent. more in 1958-59 than three years earlier. The latest figure of £478,000,000 amounts to 2.3 per cent. of the gross national output, compared with about 2.7 per cent. in the United States. If expenditure on research for defence is excluded, the British figure doubled between 1956 and 1959 from £122,000,000 to £243,000,000.

According to the latest issue of the Treasury Bulletin for Industry, about two thirds of the research is paid for by the Government, although nearly 60 per cent. of it is done by private industry, working partly on Government contract. Research carried out by Government departments and agencies rose by 80 per cent. between 1956 and 1959, whereas research in industry went up by 44 per cent.

DAVID O. MCKAY